THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XX. No. 476—23RD YEAR.] LONDON, JANUARY 3, 1871. [Subscription { 15s. in Advance. / 18s. Credit. / per Annum.] Price 8d. Unstamped.

RAMSAY'S NEWCASTLE CANNEL
COAL. Analysis—
10,000 cubic feet of gas per ton of coal.
26-candle gas.
13¼ cwt. coke per ton of coal.
RAMSAY'S PATENT CONDENSED COKE.
DO. GARESFIELD COKE.

RAMSAY'S FIRE-CLAY ARTICLES.
GAS-RETORTS, introduced 1828.
FIRE-BRICK WORKS, established 1804.
FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire-Clay.
The Fire-Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article.
The FIRE-BRICKS (marked "RAMSAY") are to be seen in all parts of the world, and the Works are the most extensive in the Kingdom.
Manufactories—Derwenthaugh, Swalwell, and Hebburn Quay, near Newcastle-on-Tyne; and London Wharves—Falcon Wharf, No. 80, Bankside; and Honduras Wharf, Cubit Town. Large stocks kept.
Address G. H. RAMSAY, NEWCASTLE-ON-TYNE.

GEORGE GLOVER & CO.,
Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.

These Meters are warranted to measure correctly and not to vary. Their acknowledged superiority has brought them into general use more rapidly than any Meters hitherto manufactured.

To meet the increasing demand, G. GLOVER AND CO. have just entered on possession of extensive premises adjoining their present Works in Ranelagh Road, and they are now prepared to execute promptly, orders to any extent. They keep in stock all sizes of Meters up to 200 lights. In cases of haste, on the receipt of a telegram early on one day, their Meters can be delivered next day in any part of England, and in the large towns in Scotland.

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236, GEORGE STREET, GLASGOW;
OR
15, MARKET STREET, MANCHESTER.

COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS-RETORTS and OTHER OBJECTS in FIRE-CLAY," and they have also been awarded in the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS-RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works as above.
COWEN'S GARESFIELD COALS.
Coal Office,
QUAY SIDE, NEWCASTLE-ON-TYNE.

FIRST PRIZE IN THE PARIS EXHIBITION.
JOHN RUSSELL and CO.,
THE OLD TUBE-WORKS,
CHURCH HILL, WEDNESBURY;
ALMA WORKS,
WALSALL, STAFFORDSHIRE;
and 69, UPPER THAMES STREET, LONDON,
Original Manufacturers of Wrought-Iron Gas-Tubes, and Holders of the present Patents; Inventors and First Makers of LAP-WELDED FLUES for Steam-Boilers.
J. R. and Co. make all kinds of Tubes and Fittings for Gas, Steam, and Water, and the largest orders may be executed in a few days.
Gun Metal, and all other kinds of Cocks, Stocks, Dies, and Taps, Galvanized Tubes, &c.
N.B.—All goods thoroughly tested before sent out, and warranted.

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WET AND DRY GAS-METER
AND
STREET-LAMP
MANUFACTURERS,
BELL BARN ROAD, BIRMINGHAM.
ESTABLISHED 1830.
All materials found for the alteration of Public Lamps for lighting with the Rod. Regulators with Lava Burners.

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NEAR NEWCASTLE-ON-TYNE.
WILLIAM COCHRAN CARR begs most respectfully to thank the Metropolitan, Provincial, and Continental Gas Companies for their patronage for several years past, and to intimate that he has rebuilt and enlarged his extensive premises for the manufacture of CLAY RETORTS; and that he is now prepared to execute the largest orders with punctuality and despatch. Orders for FIRE-CLAY RETORTS, of all shapes and sizes, FIRE-BRICKS, and all other articles in Fire-Clay, executed on the shortest notice, and on the most reasonable terms.
London Agents: JAMES LAWRIE & CO.,
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J. & W. ROMANS, of Edinburgh and London, in returning thanks for the confidence hitherto reposed in them, beg to intimate that they have extended their Colliery connexion for the supply of SCOTTISH CANNELS, and have taken a lease of the CROWN WHARF, LIMEHOUSE CUT, LONDON, where these rich Coals can be obtained at the lowest prices.
Messrs. ROMANS, being lessees of several Gas-Works in Scotland, have their Cannels tested in the ordinary working-process-way of gas-making, thus securing for their customers additional guarantee, beyond mere laboratory experiments.
Contracts made to supply any quantity, and analysis sent, on application to the Offices, 53, Frederick Street, EDINBURGH, or 1, Walbrook, Mansion House, LONDON.
Shippers of steam and house Coal, entered on the Government list. Freightage secured on best terms.

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JAMES FERGUSON & CO.
LESSEES SINCE 1832.
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LEITH.

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Patentees of the Standard Gasometers for the Government,

TWO MEDALS,

LONDON, 1862.

HAVE OBTAINED THE

HIGHEST

PRIZE

FOR

SILVER MEDAL,

PARIS, 1867.

IMPROVED DRY GAS-METERS AND GASOMETERS,

AT THE

PARIS EXHIBITION.

RANELAGH WORKS, RANELAGH ROAD, PIMLICO, LONDON, S.W.;
AND 127, BOULEVARD DE MAGENTA, PARIS.

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COOMBS WOOD PATENT TUBE-WORKS,

OLD HILL, near DUDLEY,

MANUFACTURERS OF

HOWARD'S PATENT IMPROVED WROUGHT-IRON TUBES,

FOR GAS, STEAM, AND WATER;

Also ORDINARY WELDED WROUGHT-IRON TUBES and FITTINGS,

FOR GAS, STEAM, & WATER, EITHER BLACK, GALVANIZED, OR ENAMELLED.

CORE BARS FOR IRONFOUNDERS, STOCKS, TAPS, AND DIES, IRON COCKS, &c.

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SILVER MEDAL, PARIS EXHIBITION, 1867.

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ALBION TUBE-WORKS, BIRMINGHAM,

MANUFACTURERS OF

WROUGHT-IRON TUBES AND FITTINGS

For Gas, Steam, Water, &c.

SOLE LICENSEES for the United Kingdom for the LAVENANT PATENT ENAMELLED TUBES & FITTINGS,

the Coating of which does not shell off, is a certain preservative from rust, and resists all effects of expansion and contraction.

LAP-WELDED IRON & HOMOGENEOUS METAL TUBES

For Locomotive, Marine, and Stationary Boilers.

Boiler-Tube Ferrules, Gun-Metal Gland Cocks, Water-Gauges, Whistles, &c.; Stocks, Taps, and Dies for Screwing, and Gas-Fitters Tools of all kinds.

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ECONOMY IN GAS PURIFICATION. A PURER GAS AT LESS COST, AND GREAT SAVING IN LABOUR.

M'DOUGALLS' PRECIPITATED PEROXIDE OF IRON.

The above Oxide is now in use at some of the largest works in the kingdom, and has gained a decided preference, owing to its efficiency, cheapness, and the great saving in labour effected by its use.

It is a pure artificial Hydrated Peroxide, with an addition of only sufficient sawdust to give it the needful lightness or porosity to prevent pressure, and every particle is available for use.

In selecting an oxide, a point more important than its price, is to learn the cost of labour entailed in its use. Whilst at large works the cost of labour for purifying, where lime alone or the natural oxides are employed, is 2d. to 3d. per ton of coals, by the use of the above Oxide it is reduced to 1d. to 1½d., owing to the purifier's working so much longer when charged, and to rapid revivification—two points of special importance in the busy season.

For export to Foreign Works it is unequalled, every particle being available, and saves freight over less concentrated materials.

NOTE.—It is important to note that only the Hydrated Peroxide of Iron is useful, simple oxide being worthless. Inferior oxides show a large per centage of simple oxide, but very little Hydrated Peroxide.

M'DOUGALL BROTHERS,

LONDON—158, LEADENHALL STREET, E.C. MANCHESTER—68, PORT STREET.

E. J. & J. PEARSON,

DELPH & TINTAM ABBEY FIRE-CLAY & BRICK WORKS,

STOURBRIDGE,

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BEST GLASS-HOUSE POT & CRUCIBLE CLAY:

MANUFACTURERS OF

GLASS-HOUSE POTS, CRUCIBLES, GAS-RETORTS, & FIRE-BRICKS OF EVERY DESCRIPTION.

TRADE MARK.

THE MEDAL FOR 1862.

The only Prize Medal awarded for TUBES & FITTINGS.

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WEDNESBURY, STAFFORDSHIRE.

WAREHOUSE: SOUTHWARK STREET, LONDON.

JAMES RUSSELL & SONS, LIMITED,

PATENTEES & FIRST MAKERS OF WROUGHT-IRON TUBES,

ONLY MAKERS OF HOMOGENEOUS METAL TUBES.

MANUFACTURERS OF

TUBES and FITTINGS for GAS, STEAM, and WATER;

LAP-WELDED, LOCOMOTIVE, MARINE, and other BOILER TUBES;

HYDRAULIC TUBES, BEDSTEAD TUBES, WELL TUBES, TELEGRAPH POSTS, COILS, &c.;

GAS-FITTERS TOOLS, VALVES, COCKS, &c.

THOMAS PIGGOTT & CO.,

(Established 1822,)

SPRING HILL, BIRMINGHAM,

MANUFACTURERS OF

TELESCOPIC & SINGLE GASHOLDERS,

CAST & WROUGHT IRON TANKS FOR DITTO;

PURIFIERS, CONDENSERS, SCRUBBERS, RETORTS, VALVES;

IMPROVED WROUGHT-IRON RETORT-LIDS, CROSS-BARS, & SCREWS;

AND GAS APPARATUS OF EVERY DESCRIPTION.

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London Agents: PORTER and LANE, 172, FENCHURCH STREET, E.C.

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ENGINEERS, WET AND DRY GAS-METER MANUFACTURERS,

BRASSFOUNDERS, & GAS APPARATUS MANUFACTURERS,

FOUNTAINBRIDGE WORKS, EDINBURGH.

SOLE MANUFACTURERS OF

Peebles' Patent Wet and Dry Gas-Meters in Tin-Plate Cases, with Tongue and Groove Joints.

IMPROVED WET METERS IN CAST-IRON CASES.

STATION-METERS, GOVERNORS, EXPERIMENTING METERS, PHOTOMETERS, PRESSURE-GAUGES, &c.

WILLIAM INGHAM AND SONS,

WORTLEY FIRE-BRICK AND RETORT WORKS,

Near

Leeds.

W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY

beg to call especial attention to their RETORTS, which have for many seasons proved to be unsurpassed in quality by any in the Kingdom, their FREEDOM FROM CRACKS and the ADHESION OF CARBON rendering them worthy the attention of all parties interested in the making of Gas.

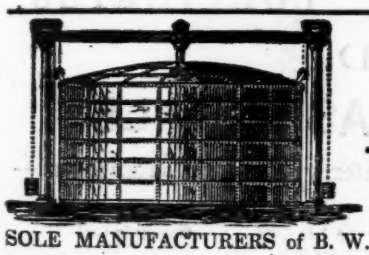
The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

A large Stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all Sizes kept in London at Mr. ALFRED WILLIAMS, Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*



IMPROVED GAS APPARATUS,

FOR CITIES, TOWNS, VILLAGES, &c.,

INVENTED AND MANUFACTURED BY

W. C. HOLMES & CO.,

WHITESTONE IRON-WORKS, HUDDERSFIELD.

SOLE MANUFACTURERS of B. W. THURSTON'S IMPROVED SCRUBBER, CONDENSER, and WASHER, in use in many of the principal Gas-Works on the Continent.

PATENTEES of the IMPROVED COMBINED PURIFYING APPARATUS, so eminently adapted for Exportation.

ESTIMATES, PLANS, and SPECIFICATIONS PREPARED for BUILDINGS and APPARATUS.

Prospectus, Price Lists, &c., on application.

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*** *Please address letters to Huddersfield.*

REFERENCES TO NEARLY 300 GAS-WORKS.

JOHN HALL & CO.,

STOURBRIDGE.

MANUFACTURERS of FIRE-BRICKS, LUMPS, & TILES,

AND EVERY DESCRIPTION OF FIRE-CLAY GOODS.

N.B.—A Stock of 15 and 16 in. CIRCULAR RETORTS always on hand. Other kinds made to order on short Notice.

FLETCHER AND MURPHY,

GARRATT STREET WORKS, OLDHAM ROAD, MANCHESTER

Manufacturers of

IMPROVED CONSUMERS WET GAS-METERS

IN CAST-IRON CASES,

THE UNVARYING WATER-LINE GAS-METER,

AND

IMPROVED DRY GAS-METERS;

STATION-METERS OF ALL SIZES, with PLANED JOINTS;

GOVERNORS, PRESSURE AND EXHAUST REGISTERS, TEST HOLDERS,

And all kinds of Experimental Gas Apparatus.

FULLERTON, SON, & CO.,

LONDON ROAD METER-WORKS, EDINBURGH,

SOLE MANUFACTURERS OF

THE PATENT IMPROVED TIN-PLATE DRY GAS-METER,

WITH SPECIAL FACILITIES FOR ADJUSTMENT AND REPAIR,

The principal parts of the mechanism being accessible by the removal of a single Screw.

GAS-METERS on the WET and DRY principles made in CAST-IRON and TIN-PLATE CASES.

STATION-METERS, GOVERNORS, EXPERIMENTAL & TEST METERS, GAS APPARATUS, &c.

LONDON AGENTS: **THORNELOE & CO.,** 34, LONDON WALL, CITY, E.C.,

GAS & WATER ENGINEERS, & CONTRACTORS

FOR GAS & WATER WORKS APPARATUS.

SHOW-ROOMS AND WHOLESALE WAREHOUSE FOR

Wrought-Iron Tubes and Fittings for Gas, Water, and Steam; Chandeliers, Pendants, Lamps and Brackets; Plumbers Work, Water-Closets, Pumps, &c.; Lead, Composition, Brass, and Copper Tubes.

METERS SUPPLIED TO ORDER FROM STOCK.

MESSRS. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS AND COLLIERIES,

NEAR SHEFFIELD.

CELEBRATED SILKSTONE GAS COALS.

Analyses by F. J. EVANS, Esq., Chartered Gas Company, Horseferry Road, Westminster:—

(COPY.)

Description.	Cubic Feet of Gas per Ton of Coals.	Illuminating Power in Candles.	Coke per Ton of Coal used. Cwt.	Ash in Coke per Cent.	Sulphur in Coal per Cent.
Best Silkstone . .	10,900	17·0	12·8	2·6	1·7
Norfolk Silkstone . .	11,000	15·94	12·5	4·4	1·64
Silkstone Brights . .	11,500	14·5	12·6	7·4	1·85
Silkstone Nuts . .	10,800	15·85	12·66	6·0	0·69

NOTE.—The illuminating power of the Gas was tested by the standard burner now used in London by the Gas Referees, under the City of London Gas Act, 1868.

Horseferry Road, Westminster, March, 1870. (Signed) F. J. EVANS.

OFFICES, 34. LONDON WALL, CITY, E.C.

TANGYE BROTHERS & HOLMAN,

10, LAURENCE POUNTNEY LANE, LONDON, E.C.;

And BIRMINGHAM (TANGYE BROS.), CORNWALL WORKS, SOHO.

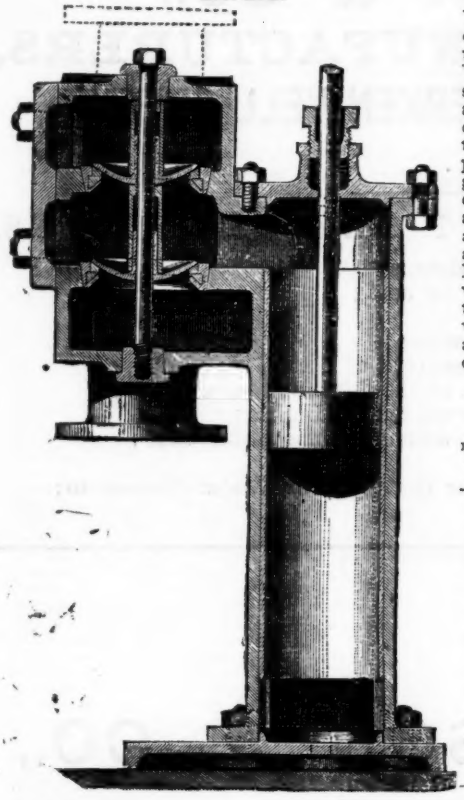
HOLMAN'S PATENT DOUBLE-ACTION VERTICAL PUMPS.

These Pumps deliver a continuous stream equal to the area and traverse of the piston; the piston is solid and has no valve in it like an ordinary pump-bucket, but each side—*i.e.*, the top and bottom sides of the piston, communicate with two pairs of valves, each side having its suction and delivery valve, which act alternately with the up and down movement of the rod; the water passages are so arranged that the whole of the valves are placed in one valve-box, and by the removal of a single plate, access is permitted to the whole of the valves simultaneously. These Pumps are fitted throughout in a substantial and workmanlike manner, and are adapted for all ordinary and extraordinary purposes of pumping. They effect great economy in first cost, space, wear and tear, and are fast superseding the costly and complicated three-throw Pumps, with their cumbrous detail of cranks, strap-heads, slings, guides, stuffing-boxes, and a host of screws, cotters, covers, and doors.

Since the introduction of these Pumps they have been further improved by the application of

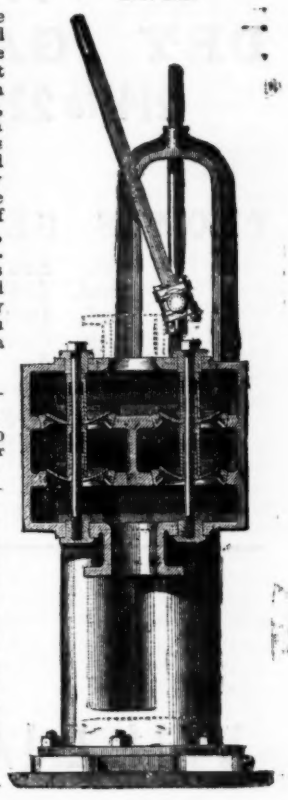
HOLMAN'S NEW PATENT BUFFER VALVES & SEATS,

No. 210.



Which have been designed with a view to obtain an increase of speed with comparatively little noise or concussion, and thereby to increase the relative duty of the Pumps. These Valves have recently been applied with the greatest success to the "Special" Steam Pump, which can be run at 100 strokes per minute with considerably less noise, concussion, and wear in the Valves than takes place with those of an ordinary Pump, running at only 30 strokes per minute. In these Valves the usual centre seat and grating, peculiar to disc Valves in general, are entirely done away with, so that when the Valve is open a free and unobstructed course presents itself for the passing of any large substances that would choke an ordinary Valve, and cause delay and loss by the stopping of the Pump. Holman's Patent Valves are suitable for boiling hot as well as cold fluids, of various properties and densities, and they are so constructed that new seats (which are the only wearing parts) can be applied by any unskilled person in a few minutes, rendering the whole equal to new at a comparatively trifling cost.

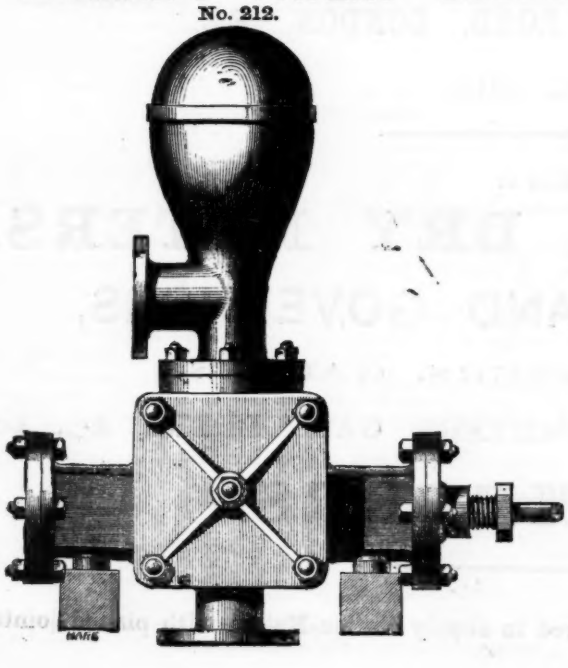
No. 211.



Diameter of Barrel.	Length of Stroke.	Iron Barrel finishing at Rod, as No. 210.	Brass Internal Barrel finishing at Rod, as No. 210.	With Slings, Guide & Standard as No. 211 extra.		Gals. per Hour at 40 strokes per Minute.
3 in.	10 in.	£11 10s.	£13 0s.	£1 5s.	Without Brasses.	1,000
4 ,,	10 ,,	12 10	14 0	1 5		2,000
4 ,,	12 ,,	14 0	16 10	1 10		2,500
4½ ,,	10 ,,	15 10	17 10	1 10		2,500
4½ ,,	12 ,,	16 10	18 0	1 15		3,000
5 ,,	12 ,,	19 10	23 0	1 15		3,300
5 ,,	15 ,,	21 10	24 0	1 15		4,000
6 ,,	12 ,,	22 0	25 15	3 0	With Brasses.	5,800
6 ,,	18 ,,	26 0	30 0	3 15		8,500
8 ,,	15 ,,	30 0	34 10	4 10		12,000
8 ,,	18 ,,	35 0	40 0	5 0		14,000
8 ,,	24 ,,	40 0	45 10	5 15		18,000
9 ,,	18 ,,	43 0	52 0	6 5		18,000
10 ,,	18 ,,	60 0	70 0	9 0		22,000
12 ,,	24 ,,	80 0	95 0	12 0		40,000

HOLMAN'S PATENT DOUBLE-ACTION HORIZONTAL PUMPS.

No. 212.



Fitted with Holman's (new) Patent Buffer Valves and Seats.

These Pumps (the principle of which is described above) are suited for general purposes, and may be rendered available by Engineers and others for their own use and application. It is very expensive to make a set of patterns for a single Force-Pump, and some simple arrangement that can be generally applied will be of great service to the trade generally. They are fitted with Holman's Patent Buffer Valves and Seats, and have a capacious Air Vessel. All the Valves are readily accessible by the removal of a single door.

These Pumps are made of all sizes, from 3 in. to 12 in. diameter, and with either Iron or Brass internal Barrels. The delivery flange can be shifted to any required angle.

Diameter of Barrel.	Length of Stroke.	Iron Barrel finishing at Rod.	Brass Internal Barrel finishing at Rod.	Gals. per Hour at 40 strokes per Minute.
3 inch.	12 inch.	£12 0s.	£14 0s.	1,350
4 ,,	12 ,,	14 0	16 10	2,500
5 ,,	12 ,,	19 10	23 0	3,300
6 ,,	12 ,,	22 0	25 15	5,800
7 ,,	12 ,,	25 0	29 10	7,500
8 ,,	18 ,,	35 0	42 0	15,000
9 ,,	18 ,,	43 0	52 0	18,000
10 ,,	18 ,,	60 0	70 0	22,000
12 ,,	18 ,,	75 0	90 0	30,000

Solid Brass Pumps, with Copper Air Vessels, extra, according to size.

These Pumps are also supplied fitted for driving by strap from shafting overhead, and are then mounted on cast-iron Bed-plate and fitted with crank-shafts, fly-wheel, and riggers, or gear and rigger, &c.

London, 1851. New York, 1853. Paris, 1855. London, 1862.

Dublin, 1865. Paris, 1867.

The SIX MEDALS AWARDED to THOMAS GLOVER for

PATENT DRY GAS-METERS,

The latter being the Highest Medal awarded for Dry Gas-Meters by the Imperial Commissioners for the Universal Exhibition, Paris, 1867.

THOMAS GLOVER & CO.,

DRY GAS-METER MANUFACTURERS,

214 TO 222, ST. JOHN STREET, CLERKENWELL GREEN,

LONDON, E.C.

THOMAS GLOVER & CO.'S PATENT DRY GAS-METERS,

1st, Are a remedy for all the defects of Wet Meters;
2nd, Are suitable for all climates, whether hot or cold;
3rd, Incur no loss of Gas by evaporation;
4th, Cannot become fixed by frost, however severe;
5th, Are the most accurate and unvarying measurers of Gas;
6th, Prevent jumping or unexpected extinction of the Lights;
7th, May be fixed either above or below the level of the Lights;
8th, Cannot be tampered with, without visibly damaging the outer case;
9th, Will last much longer than Wet Meters;
10th, Will not cost more than one-half for repair that Wet or Water Meters do;
Are upheld for five years without charge.

WILLIAM PARKINSON & CO.,

(SUCCESSORS TO SAMUEL CROSLEY,)

COTTAGE LANE, CITY ROAD, LONDON, E.C.

Established 1816.

MANUFACTURERS OF

PATENT WET & DRY METERS,

STATION-METERS AND GOVERNORS,

PRESSURE REGISTERS, GAUGES,

EXPERIMENTAL METERS, PHOTOMETERS, GASHOLDERS, &c., &c.

WATER METERS.

W. P. & Co. beg to state that they are now prepared to supply Station-Meters with planed joints.

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TO CORRESPONDENTS.

INQUIRER.—*The Sales of Gas Act does not compel a gas company to furnish a supply of gas, but no company should refuse if satisfactory security is given for the payment of the gas-rent.*

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TUESDAY, DECEMBER 20, 1870.

Notes upon Passing Events.

ITALY—that is, the kingdom of Italy—is the kingdom of flukes. A series of events unexpected, and contrary to the calculations of the wisest diplomatists and the wildest republicans, have enabled Victor Emmanuel to eat his artichoke with extraordinary rapidity, and reign over an Italy united from the "Alps to the Adriatic," and, more extraordinary still, in the year commencing 1871. Italy's good luck pursues her with a persistence most amazing. The power of France gave her Lombardy, Parma, and Tuscany, and the outlying Roman States; the power of Prussia gave her Venice; the fall of the Empire gave her Rome. But France—that is, Imperial France—which made a kingdom of a geographical expression, on one point was jealous. France created the Suez Canal—a realization of Napoleonic ideas—and meant to keep to herself the benefit of Marseilles as the principal port for traffic to the Indian seas. But, in pursuance of the French proverb that "Man proposes and God "disposes," the fall of the French Empire has transferred to Brindisi and Italy all the advantages of the overland route and the Suez Canal. The French Post-Office, before the Franco-Prussian War, threw every obstacle possible in the way of the Brindisi route. Now it is, in fact, the only route for our overland mail. Brindisi will rise from classical obscurity, and flourish on the misfortunes of her best friends. To make Italy's good fortune overflowing, that truly Italian idea, the Mont Cenis Tunnel, has been carried into the region of fact. The mountain having been pierced under circumstances hitherto deemed impossible, we have yet to see how gradients so unfavourable, with such difficulties in the way of ventilation, will be worked. But as difficulties of such an extraordinary nature have been overcome by Italian fervour and English mechanical skill, no doubt the problem of working will be solved in a satisfactory manner. It is not a little curious that the three most remarkable, most sensational engineering feats of the present day have been achieved contrary to the opinion, but not without the assistance, of the most eminent English engineers—in each instance, by the energy of non-professional men—the Suez Canal, the Atlantic Telegraph, and the Mont Cenis Tunnel: none of them received any encouragement from the oracles of the profession. They were all carried out by young men who had their reputation to make. The Suez Canal, so far from being an injury to British commerce, will be, if of any use, a valuable assistance. The project of another Italian line by Mont St. Gothard—one of the objects of French jealousy—will now be carried out. One formidable obstacle still retards the progress of the Italian kingdom—the jealousy and ignorance of everything practical of the official engineers.

A French lady has been calling attention to the deficiencies of the working and lower middle classes in sewing and in cooking. Cooking seems, like music, a gift of certain nations. The French have it in perfection, stimulated by poor food and dear fuel. Italian cookery is atrocious; and German, where unimproved by French contact, greasy and unsavoury. It is much to be desired that some of the fervour directed towards making women fit for physicians and barristers were directed to making them good wives and mothers. There may be exceptions, but we have never come across a charity school where even the principles of cookery were taught. While a smattering of superficial knowledge is distributed, the girls never get a good lesson on "the "difference between simmering and boiling!" There is no sewing in our workhouse schools to be compared with that turned out of the convents of Belgium and France. Indeed, we should say that in the female orphan asylums round London more attention is paid to a parrot-like instruction in religious phrases than in any useful knowledge. Many of the girls turn out hypocrites: most of them, from the severity with which they are treated, liars; but it is very rare to hear of the manufacture of a good governess or a good domestic servant. The model prize girls are often female samples of Uriah Heeps. There is no reason why cookery should not form part of the daily education of every girl above eight years old who has to get her own living, or whose husband has to get his living. But there is no standard school book on roasting, boiling, stewing, frying, making soups, and cooking vegetables. Mrs. Beeton or Miss Acton could have produced such a manual, if any of the book-publishing religious societies had asked for such a necessity. As to sewing, the art will be found more cultivated in the higher than in the lower middle classes. A widow lady, who had been well trained at home and abroad as a

governess, and in that capacity had acted in several noble families, on the death of her husband opened a day-school in a district of rich London shopkeepers. One day she received a visit from a very grand lady, the mother of a pupil, and the wife of a thriving shopkeeper. She came to protest against her daughter being taught the art of plain sewing and cutting out body linen. "We "are well satisfied," she said, "with Maria Jane's progress in "music and other accomplishments, but we keep four servants, "and my daughters need never do plain work." The schoolmistress at first employed the ordinary common-sense arguments without effect. She added, "When I lived in the family of the "Duchess of Blank, my four pupils, the Ladies, &c., were all "taught to cut out and sew the garments they presented to the "poor. It is my system—I cannot alter it." The name of the duchess acted like a spell, and the purse-proud dame submitted. Such are the peculiarities of a large class in rich England. It is from the influence of the intelligent women who have been returned to the School Boards that we anticipate a better system, better teachers, and more useful books in our elementary schools. The example will speedily spread to our many ill-managed school charities, the worst managed being those for girls.

The *Times* of the 29th contains a letter from a Saxon nobleman, not bitterly written, but bitterly complaining of the English arms sold to the French combatants. German newspapers as a rule publish their own views and no others. The omnivorous maw of the news-devourers is only to be met in England and America. As a matter of fact, for every gun supplied by England, ten are sent from America. But guns are not the only munitions of war; clothes are equally needful. A man in a peasant's linen blouse, with the very best gun, is of but little use in this winter weather. The soldier wants a uniform, a great-coat, and a blanket. For all these the Germans are absolutely dependent on neutral foreigners. We happen to know that the German Government has purchased and received from one firm at Dewsbury, in Yorkshire, blue cloth for uniforms to the value of two millions sterling. The purchases of blankets from other Yorkshire firms have not been on a less extensive scale. The cloth and other woollen manufacturers of Belgium have been kept pretty busy from the same sources. If it be decided in future wars that absolute non-intercourse is to be enforced, it may as well be understood that it will cover food and clothing as well as the weapons and ammunition of war.

The fall of snow—not very heavy as we write, but threatening to repeat the London street difficulties of past years—is already trying the Commission of Sewers hardly. They have been driven to adopt what was forbidden to contractors—the expedient of shovelling snow into the sewers—an excellent plan if conducted with discretion. We have never doubted that if the Commission of Sewers could find a proper man for the superintendence, they would execute the City cleansing infinitely better and not much more expensively than a contractor or a batch of contractors. Especially as the job ought not to be treated solely as a matter of price, but chiefly as a matter of business to be well done at even a high price. The difficulty is to find the man, and make it worth his while both to stay and to be honest. The City Corporation system is not favourable to good men. The Common Council, who are the commissioners, have no idea of paying for results. They like a fixed salary "on principle," and "on principle" they object "to gratuities." The official is most likely to have his salary raised by the Corporation, who Pharisee-like, is always bustling about doing nothing, with a bundle of papers under his arm, "where Common Councillors most do congregate," and who has the natural obsequiousness that constitutes a good City official. A man who really has his heart in his business has little time for cultivating the small arts which create official success in the City of London. The most zealous and able man, if he have a weak digestion, and cannot stand "conviviality," is heavily handicapped among a class with whom after-dinner geniality goes for so much. Mr. Isaacs's Committee on City Lands will scarcely dare to report "that if the chairman of the Holborn Committee, the City Soli-"citor, and the City Architect had seen dangling before their "noses a handsome bonus when all the waste lands of the Holborn "improvement had been converted into streets by Christmas, "1870, the thing would have been done." Public bodies should give reasonable salaries, and pay for results, where money is to be realized, by handsome gratuities, but give nothing extra for routine work and to those who do their duty and no more. This recommendation is especially applicable to the difficult problem of City scavenging.

The question of the St. Paul's Churchyard obstruction has again been before the Commissioners of Sewers, and this time has assumed a very sensible and promising shape. The death of Archdeacon Hale will remove one living obstruction in the Chapter, for he was one of those men who, however excellent in private life, in public works are simply nuisances. St. Paul's Churchyard, after the Poultry, is the grandest block, and consequently waste of time, money, and temper, between the Bank and Charing Cross. We do not count Temple Bar, because that ugly, purposeless stop-gap is doomed. The Dean and Chapter some time since offered to give up a space on the western end for the trifle of £20,000. The Metropolitan Board, when asked to contribute half this sum, very wisely declined, unless the road on the northern side were permanently thrown open. Finally, on the motion of Mr. Lowman Taylor, the Commission have decided to offer the Chapter £20,000, provided they will give so much of the disused churchyard on the northern side as will permit two vehicles to pass. The objection suggested, that opening the roadway would endanger the safety of persons frequenting the cathedral, is, looking at the churches in the Strand and other thronged thoroughfares, evidently one of Archdeacon Hale's obstructive absurdities. The objections of the shopkeepers will be overcome by the use of asphalte pavement. Better still would be a glass-covered arcade, paved with wood. At any rate we do not doubt the thing will somehow, and soon, be done. Holywell Street is doomed by the Law Courts. The Poultry gut is a matter of money, which must be found if the St. Paul's block be abolished. Talking of the Poultry reminds us that the most perverse enemy of the underground lines must be compelled to admit utility at a season when cab and omnibus traffic is reduced to a minimum, when it is easier to go four miles by the rail than one by the street.

If the good people who imagine that every human taste and weakness can be eradicated by education, or regulated by an Act of Parliament, or an order of a Privy Council committee or some Board for the purpose created, could only turn their attention to the statistics of the week that commences on Boxing-day, some curious problems would be raised for their consideration. We should like to know how many of the working-classes get drunk in London on Boxing-day, and how much money is expended in that very unprofitable pursuit; how many go on that day to theatres, and other amusements, at a charge not exceeding one shilling; we should like also to know where the money comes from for the week's saturnalia. It certainly is a mystery, that, no matter how bad may be the state of trade, for one week the places of amusement and public-houses are crowded. The waste of money must be frightful; not that we consider money spent in amusement or beer in moderation a waste, but in Boxing-week the waste is flagrant. Can any philanthropist suggest a remedy? What say Dr. Congreve and Mr. Frederick Harrison—the Comptists to whom the capitalist and manufacturer are also almost as offensive as the clerii of any denomination. Will they suggest a way of Christmas amusement quite as lively, more economical, and less degrading than the orgies of public-houses and gin-shops? One improvement—whether due to the police or the spread of reading and writing we know not—we do mark: fighting is rare. The noble art of self-defence, if cultivated in private, is not practised in the streets.

The views we expressed in our last "Notes" on the possibilities of railway improvements, and consequent protection from accident, are completely borne out by the letter of a railway official which appeared in the *Times* last week. He observes that Sir Robert Peel was thought to give undue encouragement to railway competition in his celebrated speech on the opening of the Trent Valley Railway, when he stated that the journey to Dublin would be completed in sixteen hoars, and to Liverpool in six hours.

But what have we now? Instead of one line of railway between the first two of those places there are three, each of them performing the journey in five hours, by a great number of express trains in each direction, and with this remarkable phenomenon, that by all the routes between London and Manchester the trains are run at or about the same hours of departure. The London and North-Western remains the shortest route to Liverpool, and the time occupied is about 5¼ hours.

Between London and Dublin the advertised time of the Irish mails, *vid* Holyhead, by rail and by sea, is eleven hours; while the time taken by the limited Scotch mails by the west coast route, between London and Edinburgh and Glasgow, is about 10½ hours.

The average rate of speed of all these trains exceeds forty miles an hour, including stoppages; the number of carriages is seldom less than twelve, representing while in motion an enormous momentum and weight to be controlled and regulated under all the varying circumstances of the weather, fog, and storm, and by night and by day.

The average speed of the railways in this country exceeds that of any other in the world; the regularity, safety, and liberty of the traveller, and his personal comfort and convenience, exceed that of continental railways.

It may be asked why all this hurry and increase of speed during the last 20 years—for it is well known that an increase of speed means heavier engines' stronger and more perfect carriages, improved and more costly permanent way, better means of signalling, endless sidings to shunt the slow trains out of the way of the fast ones, and last, though not least, a more efficient and well-organized staff of *employés*. It may be attributed in some respect to the competition that has arisen between all the great companies, encouraged as it has been by Parliament granting competing lines between all the most important places in the country. But that is not all; the public have demanded that the postal service between London and Ireland and Scotland shall be accomplished within a given time, so as to enable the commercial relations of those great centres to be carried on, and it is performed with remarkable exactitude from night to morning between places that are 400 miles asunder, and which, under the old mode of conveyance 40 years ago, it took days to accomplish.

It cannot be too clearly understood that if it were possible to reduce the speed of the fast express and mail trains to 35 miles instead of 40 miles an hour, the saving to the railway companies would be very great, in some cases equal to a

half per cent. on their dividends, and that the safety of the public would be enhanced.

The goods and merchandise traffic conducted by the railways is in extent simply marvellous. The speed at which it is conveyed is not less than twenty-five miles an hour; and it is not generally known, although people are sometimes astonished at the work accomplished by the Post-Office, that the large and important shipping traffic between Manchester and London is collected almost as late, and delivered as early as the post letters; in fact, a merchant, when he arrives at his office early in the morning, finds the invoice sent by post on his desk, and the goods sent by train at his warehouse door. It is the same with regard to Liverpool, Bradford, Leeds, and Birmingham, and so exacting has the mercantile public become in this respect, that an hour's delay leads to endless claims for compensation for loss of sale and loss of market, which, if not at once settled, result in the transfer of business to other and formidable rivals, who for a time are probably more fortunate.

This illustrates the system of express goods trains carried on not only to the manufacturing districts of Lancashire and Yorkshire, but all over the kingdom to Scotland and Ireland.

Circular to Gas Companies.

As usual at this season of the year, and more especially when, as now, there is a continuance of excessive cold weather, there are complaints from many parts of the country of deficiencies in the supply of gas, and on Saturday evening last some parts of the metropolis appeared to be very insufficiently supplied. In the provinces, however, these complaints recur regularly every winter, and the lesson they teach seems to be thown away on directors and managers, who in many cases continue to neglect to provide for the increased demand on their works which the season always brings. The last number of the *Stamford Mercury* contains no less than four such complaints from that and other towns in the district in which it circulates. Some of these are no doubt due to the dilatoriness on the part of contractors in completing works they have undertaken, but most of them must be ascribed to the cause we have mentioned above. In one case we read: "The gas-"works seem scarcely large enough to supply the wants of the town. "If there happens to be an extra demand, the stock of gas becomes "exhausted. There was none to warm the church on Sunday "morning." In another it said that "there has been great diffi-"culty in obtaining gas during the last week. Several shops on "this account have been in comparative darkness, and the "want of gaslight has been felt in most parts of the town." These are samples of the complaints which always reach us when cold and dark weather prevails for any length of time. This year, moreover, we have from several places complaints not only of a deficient supply, but of impurity in the gas, which is probably but too well founded. Under pressure, managers with a small purifying plant are sometimes compelled to work directly into the mains, and thus distribute a foul gas. It may be considered trite on our part to urge that a company, undertaking to supply a district with gas, is bound to provide for its maximum wants; and as year after year increases the demand, to furnish the necessary extensions of plant. At this season of the year, too, every gas company should ascertain the pressure of gas in the mains all over their district during the hours when the consumption is greatest—say, from five to six o'clock—so as to find out the weak points, and enable them to improve the supply in those districts which require it.

The *Echo* is, in some respects, a remarkable paper. It is wonderfully cheap, and some of the information with which it supplies its readers has the usual correspondence with cheapness. This agreement is to be particularly observed when scientific and sanitary subjects are dealt with. "*We know*," it is in the habit of repeating every now and then, "that champagne is made from "petroleum." Naturally enough, too, the *Echo* believes in the production of butter from Thames mud, and generally the wildest statements of the unprincipled quacks, who, from malice or by way of joke, seek to alarm the public, are editorially adopted, and duly commented upon in its columns. Last week it discovered a mare's-nest in the Beckton works, which it believes to endanger the safety of Woolwich Arsenal. "The Chartered Gas Com-"pany," it says, "have now completed the construction of "four large gasometers on the banks of the Thames, opposite to "Woolwich Arsenal." As a matter of fact, the works are two miles below Woolwich, but that fact will not in the least abate the editor's alarm. "Each of these giant erections," it is added, "is 180 feet in diameter, and contains one million cubic feet of "gas. If England were ever invaded, and the enemy could suc-"ceed in exploding all the four at once, is it not possible that "the arsenal might be crippled for a time? Four million cubic "feet exploding at the same moment would make a tolerable "commotion"!! It is curious in these days to find a man professedly well educated, and presuming to teach the public, impressed with the belief that gas *per se* is explosive. Such a belief was common in the early days of gas lighting, and was entertained by no less a person than Sir Joseph Banks. But it might have been thought that the experiment by which Mr. Clegg astonished and convinced Sir Joseph, would have been sufficient to relieve men's minds for ever. Mr Clegg drove a pick-axe through the side of a gasholder, and put a light to the hole. The gas, of course, burnt harmlessly away, and such would be the result if a French or Prussian shell were to drop into one of the Beckton gasholders. We all recollect the panic caused by the accident at the London Gas-Works, Nine Elms, a few years ago, which also caught the Legislature, and caused provisions to be inserted in several gas Acts, forbidding the erection of gasholders within 200 or 300 yards of a dwelling-house. The panic is, we hope, subsiding, but still the consent of the occupier of a dwelling-house within 300 yards is in most cases necessary before storeage works can be erected on a site; and amongst the Bills, copies of which have just been lodged, is one repeating the positive restriction in the case of an important company.

A new method of immediately using up the tar produced in the manufacture of gas from coal, and thereby professedly adding to the value, quality, and quantity of the gas produced, comes to us from America. The arrangements for effecting this object are simple. Jacketed retorts are set above those in which the coal is distilled, and contrivances are provided for allowing the tar from the hydraulic main to trickle into these upper retorts, accompanied by a stream of superheated steam. The retort, we gather, is filled with coal or "other material," by traversing which in a state of incandescence the tar is volatilized, and the steam decomposed into hydrogen and oxygen. The mixed vapour and gases then pass on into the jacket, where, exposed to a still higher temperature, it is alleged that the hydrogen of the steam combines with carbon from the tar to produce light and heavy carburetted hydrogen, and the oxygen unites with other carbon to form carbonic oxide and some carbonic acid. The latter part of the statement is, no doubt, strictly true; but, while plainly seeing how this accounts for the increase of volume in the gas, we fail to discern how it also accounts for the "increase of candle power" which is alleged. Gas engineers in this country know that expedients of this kind have been tried times out of number, and that jets of steam have often been employed to increase the volume of gas, and to this end with decided success. But in no case that we ever yet heard of was steam successfully employed to improve illuminating power. We must live and learn, however; and if it be proved that free hydrogen will combine with carbon from the tar to form either marsh or olefiant gas, we shall have been taught something worth knowing. In the meantime, we take leave to doubt the value of the invention we have briefly described.

In order to complete the set of drawings of the Chartered Gas Company's new works at Beckton, we to-day present to our subscribers a supplemental sheet, containing drawings of the side and end elevations of the retort-houses. The sheet is numbered 3A, and in the bound copies, which will shortly be ready, will be inserted in its proper place.

Correspondence.

EXHAUSTER GOVERNORS.

SIR,—It is just necessary for me to say that the method I recommended for controlling the exhauster in no way depends upon the action Mr. Whimster is so good as to assign to it.

Your professional readers will know how to appreciate the arguments contained in paragraphs Nos. 5 and 6 of his disquisition on the subject, which appear to be chiefly based upon the startling assumption, that the relative actions of a gasholder and of a float pressure-gauge "are essentially the same in principle."

Ratcliff Gas-Works, London, Dec. 30, 1870. HY. E. JONES.

THE THEORY OF GAS-BURNERS.

SIR,—I have read with interest Mr. Stimpson's letter in your last number. The present appears one of the frequent cases where several inquirers, working in the same direction, have arrived at similar or analogous results—a circumstance always favourable to the elucidation of scientific truth.

I should hardly have expected to find anything directly bearing on this subject in the abstruse and elaborate "Photo-Chemical Researches" of Messrs. Bunsen and Roscoe; but, in consequence of Mr. Stimpson's reference, I have looked at them more closely. It appears that in testing the *chemical* (not the *illuminating*) power of a certain flame of carbonic oxide they found it to vary, with different consumptions of gas, according to a somewhat complicated algebraical formula, which is reducible, as Mr. Stimpson points out, to a shape analogous to that which he and I have given. If, therefore, we assume that the illuminating power varies in the same way as the chemical power, this becomes an anticipation of the law in question; and it is remarkable that the diagram published in Bunsen and Roscoe's paper is at once recognizable as the same form I endeavoured to describe—*i. e.*, a straight line cutting the line of abscissæ at some distance from the origin.

I agree, therefore, with Mr. Stimpson in attributing to these eminent physicists the earliest enunciation of the principle in question; but I think, from the complicated form in which their expression is given, it is very doubtful whether its application to the ordinary phenomena of burners would have been perceived had it

not been rediscovered in its simpler shape by Mr. Stimpson and myself. At all events, this multiplied evidence of its accuracy is very satisfactory. WM. POLE.

Athenæum Club, Dec. 23, 1870.

Legal Intelligence.

ROLLS COURT.

THURSDAY, DEC. 8.

(*Before the* MASTER OF THE ROLLS.)

SAWYER *v.* PETERBOROUGH GAS COMPANY.

In this case, a report of which appeared in the last number of the JOURNAL, p. 873—

The MASTER of the ROLLS now delivered judgment. He said: The object of this case is to rectify an agreement reduced into writing between the plaintiff and the defendants, on the faith of which the plaintiff withdrew his own bill in Parliament, and his opposition to the bill of the defendants. The first question is what was the contract come to between the parties? If this is once clearly ascertained, then the question is whether a mistake made in the agreement is one common to both parties. I agree with an observation made by Mr. Besley, to the effect that the agreement was come to when both parties were agreed upon and satisfied as to the terms of it; and then the question is what were those terms when reduced into writing? It is stated by Lord St. Leonards, and I think very accurately, that to justify the interference of the court the mistake must be on both sides. The question is, will the facts of this case prove this mistake and justify its reparation? It appears that in and prior to 1867 the plaintiff had gas-works at Peterborough not protected by Act of Parliament. The new company had given notice of applying for an Act to establish gas-works, and of course a strong contest between the parties was impending. To prevent this an agreement was proposed, by which the defendants were to buy the works of the plaintiff, at a price settled, on the basis of sixteen and two-third years purchase on the net profits, which were to be settled by arbitration. The draft of the contract was prepared in black ink by Mr. Percival, the plaintiff's solicitor. Mr. Rutland, the defendants agent, altered it in red ink, and this again was altered in blue ink by Mr. Percival. The first meeting was on the 3rd of December, 1867, and the agreement itself was finally settled and executed on the 10th of that month. Mr. Percival's evidence was that on the 3rd of December, Mr. Rutland and several of the directors of the company met together, and that Mr. Rutland and Mr. Taylor on behalf of the directors stated their desire to avoid competition, and to come to an arrangement for the purchase of the works. A discussion took place as to the mode of payment of the purchase-money. On the 4th of December, the draft was prepared by Mr. Percival, and sent the same day to Mr. Rutland, and the passage in question stood in the draft thus: "The purchase-money awarded is to be paid as follows—one-half thereof at the expiration of six calendar months from the date hereof, and the remaining half part at the expiration of twelve calendar months from the date hereof. The last-mentioned half shall bear interest from the expiration of the said six calendar months until payment, at 5 per cent. per annum, without prejudice, however, to the vendor's right to enforce completion of the contract." On the 7th of December, Mr. Rutland returned the draft altered in red ink, thus: "The purchase-money to be awarded is to be paid as follows—one-half part thereof at the expiration of nine calendar months from the date hereof, and the remaining half part by two equal instalments, the first of such instalments to be paid at the expiration of seventeen calendar months, and the last of such instalments at the expiration of two years from the date hereof, and the said two instalments shall bear interest from the expiration of the said nine calendar months, until the respective payment thereof at 5 per cent. per annum, without prejudice, however, to the vendor's right to enforce a completion of the contract if the said two instalments, or either of them, shall not be paid at the time named in this clause, and without prejudice also to the purchasers right to pay both or either of such instalments before the times named, and on payment of the said last-mentioned instalment and interest, proper conveyances and assignments of all the property, estate, and effects and undertaking sold shall be made and executed by the vendor, and all other necessary parties to the said purchases." On the 7th of December it was returned in this altered state, and on the 9th it was returned to Mr. Rutland by Mr. Percival, who stated in his affidavit that he went through the agreement and made such alterations as appeared to him necessary in the interest of the plaintiff in blue ink. It appeared to him that there was no provision providing payment of interest upon the first half of the purchase-money, in the event of its not being paid on the day fixed for payment, and he therefore altered the clause in a manner to provide for the payment of interest on the first half of the purchase-money in case of default of payment thereof, as well as on the remaining half, from the time provided for possession being given to the purchasers. He further said he had no authority to make any alteration respecting the terms agreed upon as to payment of interest. The alterations in blue ink come to this, that the respective portions of the purchase-money should bear interest from the time the same should respectively accrue due; the consequence of which was that that which was to accrue due two years afterwards would not bear interest except from that time. On the same day he took it to Mr. Rutland. No discussion took place between them. Mr. Rutland had it engrossed and executed the same day. The introduction of the words cutting off the interest on the second instalment was clearly a mistake of Mr. Percival's, and he explained how it arose. Was it also a mistake of Mr. Rutland's. Unfortunately, he was dead. He clearly did not introduce the alteration, which was not suggested or made by himself; he seemed to have been wholly unconscious of it. In the next place, it was to be observed that the agreement itself was not consistent with such an alteration. The sixth paragraph gave the defendants power to pay off the money before the date when it became payable; and this was introduced by Mr. Rutland, and was wholly inconsistent with the fact that no interest was payable at all in the meantime. There was also very strong evidence to show that the case of the plaintiff was correct, and that the passage which excluded the interest on the second instalment was introduced by a mistake common to both sides. One piece of evidence was strongly confirmatory of this view—namely, that Mr. Rutland, the next year after payment of the first instalment, when, if they were right, they were paying no interest at all, went to the bank and asked them to pay the company more interest on their deposit in consideration of the amount of interest they were paying to the plaintiff. In addition to this there was the evidence of Mr. Taylor, which strongly corroborated the plaintiff's case. Mr. Taylor was an officer of the company—he was an unwilling witness, being compelled to give evidence; and, further, he was the principal spokesman of the company. He spoke of the interview, and was asked, "Was there at the interview mentioned in paragraph 9 of the answer any stipulation made that the company were only to pay interest from the time the instalment had become due till the actual payment?" He said, in reply, he never heard any. Being asked whether instructions were given to Mr. Rutland to alter the proposed agreement for payment of interest so as to make interest only payable from the time the said instalment was to be paid, he replied, "I never heard that. I do not think any such instructions could have been given to Mr. Rutland at that meeting without my hearing it. Mr. Rutland is dead. He never at any time afterwards told me, nor suggested, that interest was not to be paid upon the unpaid balance, or that no interest was to be paid at all. After the meeting of the 6th of December I believe I never saw the agreement, to read it, until it was sealed at the next meeting, on the 10th of December, 1869." Against this was the affidavit of Messrs. Miller and Searjeant, and this was all upon which the defendants relied. "We say that on the 6th of December, 1867, a meeting of the directors of the limited company was held, at which the deputation attended to report the result of their interview with the plaintiff and his solicitor, and Mr. Rutland laid before them the draft agreement. Mr. Rutland read the draft agreement, and a discussion took place with respect to its terms. The directors were dissatisfied with the draft agreement in various respects. One objection was that the time fixed for the payment of the first of the purchase-money was six months from the date thereof; another objection was that the terms of the draft differed from those proposed by making the second half of the purchase-money payable in one instalment at the end of twelve months, instead of in two instalments at more distant periods; and a third objection was, that the interest was made payable from the time of possession being taken by the company. The motives of the limited company in desiring more time for the payment of the purchase-money were the apprehension on their part that they would be unable to get the money for the first half of the purchase-money subscribed in so short a period as six months, and the consideration that if they were let into possession in May they would incur considerable expense in carrying on the works for some months without receiving any considerable return for their outlay. The discussion ended in instructions being given to Mr. Rutland to obtain an extension of the times for letting the limited company into possession, and the payment of the purchase-money, and to alter the provisions of the draft agreement with respect to the payment of interest, so as to bring it into accordance with the terms agreed upon as hereintofore mentioned at the interview of the 3rd of December, 1867." It clearly was not so understood by Mr. Taylor. It was also clear that it was not so understood by Mr. Rutland, for he took no steps in consequence of it, and he never altered the agreement in conformity to it. It clearly was never mentioned to Mr. Percival; the alteration in the contract was so important and so peculiar that if introduced it must have been prominently brought forward by Mr. Percival and also by Mr. Rutland. I think that Mr. Rutland never perceived the change when it was made, but agreed to the contract in this respect as it originally stood. The next question is, whether Mr. Rutland had power and authority to agree to it? I think he had, and that he could agree to it, and to the agreement giving the plaintiff interest from the date when the company took possession. No doubt the contract cannot be set aside; the parties cannot be restored to their former situation, but my belief is that the two agents, Messrs. Miller and Searjeant, made a mistake, and that when the agreement was executed no one believed or intended that the interest was not to be payable at once upon taking possession, and that the interest upon the second instalment was to be suspended until the money became payable. I am of opinion, therefore, that the plaintiff is entitled to a decree, but there must be no costs given.

VICE-CHANCELLOR'S COURT.—MONDAY, DEC. 5.

(*Before Sir* J. STUART.)

Re THE COLONIAL AND GENERAL GAS COMPANY, LIMITED.

The question in this case, involving a question of considerable importance, was raised by a summons taken out by the company, that certain debentures issued by the company were not a charge upon the uncalled capital of the company. The company was incorporated under the Act of 1862, with a nominal capital of £250,000, in 10,000 shares of £25, for the purpose of obtaining concessions and erecting gas-works, and for other analogous purposes. The Articles of Association (11) authorized the directors to issue debentures in order to raise money in such manner as they should deem best. The debentures issued charged all the lands, property, and effects of the company of what nature or kind soever which the company should then hold or be possessed of, such charge to rank equally, and not by way of priority or preference, with other debentures or other securities of the like kind issued by the company. The present claimants, Messrs. Lishman, held the debentures now in question. They were issued on the 17th of October, 1864, payable on the 1st of October, 1869. On the 16th of October, 1866, a resolution was passed to wind up the company voluntarily, but on the 10th of November, 1866, the company was ordered to be wound up under the supervision of this court.

Mr. DICKINSON, Q.C., and Mr. GRAHAM HASTINGS contended that on the authorities it was the clear law of this court that debentures issued by a company under these circumstances were entitled to no priority with respect to the calls unpaid.

Mr. MARTEN said that the cases to which his learned friend referred were all decided on the special circumstances of the cases, and did not lay down a general principle. On general principles it was clear that these debentures were a charge upon all the property of the company.

The VICE-CHANCELLOR said that, according to the principle on which this court acted in matters of copartnership, whatever a member of partnership agreed to contribute formed part of the assets of the partnership. A debt due to a company formed part of its assets. So was a debenture, if there was nothing in the constitution of the company to prevent the directors from issuing a debenture which should be security charged on all the assets of the company, and a creditor holding such a debenture would be entitled to resort for payment to all the assets of the company. The argument in this case was that even although a shareholder might be bound to contribute at any time to the assets of the company a certain sum, that sum formed no part of the assets until a call was actually made on the shareholders. The Articles of Association of this company defined the amount of the capital, and in doing so included the unpaid as well as the paid capital. They made no distinction between money to be paid on calls not yet paid and calls which had been already made. The articles further authorized the board of directors to make calls on the members of the company in respect of all the money unpaid, and every member was liable to pay such money. Each individual partner in the concern was therefore bound by that provision, and in cases of this kind there was no difference in principle between a call that must be paid when made and any other kind of property of the company. Some property was outstanding, but the whole property formed its capital. To say, therefore, that money due on a call which must be paid when made formed no part of the assets of the company was incorrect. There was nothing in the constitution of the company to prevent the members of it from charging any part of the property, and the terms of the debentures were very large. The very circumstance that calls were made to pay the debts of the company showed that the shareholders were debtors to the debenture-holders, for whose benefit the calls were made. If not, the debts of the company would be payable out of property which did not belong to the company. It was impossible to say that the money due on calls was not the property of the company. The Legislature had no doubt made a distinction between calls to be made in respect of the capital of the company and calls to be made to meet the expenses of winding up a company; but both on principle and on the provisions of the articles of the company and on the form of the debentures, the debenture creditors had a right to be paid in priority to other creditors out of all moneys arising from calls made to meet the payment of the debts of the company, and no accurate distinction could be taken between calls actually made and calls to be made for that purpose. There was no doubt or difficulty in saying that property situated as this was could be charged for; it was constantly done in other similar cases. For example, if a builder wanted money to purchase materials for his buildings, it was the common practice to

borrow on the security of money paid or to be paid to him on his contracts although at that moment nothing might be actually due to him on the contract. A distinction was attempted to be made in the arguments between the existing and non-existing property of the company. What the latter species of property was it was difficult to see. However, upon none of the reasons assigned could Messrs. Lishman's claim be successfully resisted. There must, therefore, be a declaration that these gentlemen were entitled to be paid their debt, in priority to the other creditors of the company, out of any money raised by calls either made or to be made for payment of the debts of the company, and their costs of this application must be added to their security.

Miscellaneous News.

ON ORGANIC MATTER IN WATER.

By Charles Heisch,
Lecturer on Chemistry at the Middlesex Hospital Medical College,
and Chief Gas Examiner to the Corporation of London.

[From the *Journal of the Chemical Society*, Oct., 1870.]

In common with most chemists, I have for many years directed my attention to this subject, and in common with many I have long since come to the conclusion that the mere *quantity* of organic matter, nitrogenized or not, forms a very poor basis on which to found an opinion as to the wholesome character of any sample of water. Believing, as I do, that the deleterious nature of organic matter is dependent on its containing living germs, which grow and set up a fermentative action within the body, I feel convinced that if only a few of such germs be swallowed, they may increase, under proper conditions, to a number to be injurious, and that therefore their original number is a matter of comparatively small importance. My attention has, therefore, been directed principally to discovering the presence of such germs, and determining their characteristic properties and appearance. I was first led to a means of doing this by being called on to assist a large manufacturer of lemonade, who some years ago almost suddenly found it impossible to make lemonade that would keep. After a day or two it became turbid, and its odour anything but agreeable. On examining the liquid under the microscope, I found it full of small spherical cells, with, in most cases, a very bright nucleus, and after a few days the odour of butyric acid was unmistakeable. After examining all the materials employed, I found that the water was in fault. On putting a few grains of the purest crystalline sugar I could procure into some of the water, it became turbid in a few hours, and the same cells were distinctly to be seen with an $\frac{1}{8}$-inch object-glass; but the butyric odour did not come on for some days. This water was procured from a deepish well; it was hard, and contained a considerable amount of nitrates, but not any unusual quantity of ammonia or unoxidized organic matter. On inquiry, I found some digging had been going on near the well, and it appeared that some drainage must have got in, though at the moment so small in amount as to be hardly appreciable. When water from the water-works was substituted, everything got right again. This led me to try all the samples of water I could procure in the same manner, and in every case where diarrhœa or other mischief could with any kind of certainty be traced to the use of a certain water, when that water was treated with sugar, these same smells made their appearance, usually within 24 hours, if the temperature were kept up to between 60° and 70°, and plenty of light admitted to the bottle in which the sample was contained. Pressure of other business prevented my making all the experiments I wished on this subject until within the last year, when I have been trying what substances contain these particular germs, which are so peculiar as to be quite unmistakeable when the observer is once familiar with them. By permitting the action of these germs on sugar to go on, they present uniformly the following appearances:—The cells gradually group together in bunches something like grapes, quite differently from the ordinary yeast globules; they next spread out into strings, with a wall surrounding and connecting the cells; the original cell-walls then seem to break, and leave apparently tubular sort of threads branched together. The strong resemblance of these to, if not identity with, the sewage fungus, coupled with the almost universal properties of water which produced them, led me to look to sewage as their source, and I found that the smallest quantity of sewage mixed with a water which might be treated with sugar, and remain clear and sweet for weeks, at once produced these germs, or rather set them growing. Water was procured from various sewers, and after standing a few days to settle, 6 drops of clear water were mixed with 10,000 grains of West Middlesex and New River water. To 6 ounces of this mixture 10 grains of pure sugar were added, a like quantity being mixed with 6 ounces of the water without the sewage. All these samples were placed in stoppered bottles in a window, where plenty of light could reach them. The water and sugar remained clear and sweet. The water with this trace of sewage did the same. The water, sewage, and sugar became turbid, in times varying from 24 to 60 hours, and exhibited the cells and strings before spoken of, and ultimately the odour of butyric acid was always perceptible. One drop of fresh urine in 10,000 grains of water, a mixture which may be kept for weeks without showing any sign of turbidity, produced in 24 hours abundance of cells, and in 48 hours branched strings. No other substances which I have tried produce the same result. Urea, albumen, nitrates, milk, and various other things have been tried, and though some have produced growths of some sort, none have resembled these peculiar and unmistakeable cells and strings. A curious circumstance took place during the last outbreak of cholera in 1866. On some few days the water of one of the water companies, which is ordinarily perfectly without action on sugar, produced, to a slight extent, those same growths, on being mixed with that body. The appearance of the butyric odour appears to be a question of quantity or time. If a water contain a large number of those cells, it may make its appearance in 24 hours; sometimes not for a much longer time; but, sooner or later, I believe it is always an accompaniment of these growths. Filtering the water through the finest Swedish paper does not remove the germs, as on the addition of sugar they grow as fast as ever. Boiling for half an hour in no way destroys their vitality. Filtration through a good bed of animal charcoal is, as far as I can find at present, effectual in removing them, and if the charcoal be well aired from time to time, it retains its power for several months; but if the water be passed continually through it without this precaution, it soon loses it, and the filtered water is as bad as the unfiltered. I am now engaged in a series of experiments to ascertain what substances, if any, retard or prevent the growth of these germs; but at present I feel certain only of this fact—that the softer the water, the more quickly they grow. In hard water their first appearance is also not a mere turbidity, but they seem to form in small clots, which on examination are found to consist of the cells mixed with crystals of carbonate of lime. The addition of nitrates or ammoniacal salts to the water, does not seem to accelerate the growth of the cells. With the view of ascertaining how far the presence of the amount of sewage which could be traced by the formation of these growths would be indicated by other means, samples of the water experimented on were submitted, before and after the addition of the sewage, to examination, by the method of Messrs. Wanklyn and Chapman, with the following results:—

New River Water.

Ammonia.	0·0022 grains in gallon.
Organic ditto.	0·0047 " "

New River Water, with Six Drops of Sewer Water in 10,000 Grains.

Ammonia.	0·0027 grains in gallon.
Organic ditto.	0·0061 " "

Another sample gave:—

Water, alone.

Ammonia.	0·000 grains in gallon.
Organic ditto.	0·0031 " "

Water, with same Amount of Sewage.

Ammonia.	0·0056 grains in gallon.
Organic ditto.	0·0050 " "

Although this shows an increase, yet the amount was in neither case such as to make one suspect mischief from the water. I am by no means prepared to say that these germs are the only unwholesome kind of organic matter that exists in water, or that water containing small numbers of them might not sometimes be taken with impunity; but I should always look with great suspicion on any water in which they existed, even in the smallest number, as they increase and multiply with great rapidity; and the fact that in multitudes of cases which have come under my notice within the last few years, a great increase of health and comfort has resulted from giving up the use of water in which they could be found, even where its use had not produced positive disease, confirms me in this opinion. Whether these cells are the true butyric ferment, I cannot at present say for certain, but I am strongly inclined to that opinion, and I feel quite convinced that when they occur in water they are distinct evidence of sewage contamination.

DR. WHITMORE'S REPORT ON THE QUALITY OF THE GAS SUPPLIED IN ST. MARYLEBONE, IN NOVEMBER, 1870:—

November, 1870.	Illuminating Power in Sperm Candles.			Mean Pressure in Tenths of an Inch.		Mean Quantity of Sulphur in 100 Cub. Ft.	Mean Quantity of Ammonia in 100 Cub. Ft.	Sulphuretted Hydrogen.
	*Mean of 22 Obser.	Highest.	Lowest.	Highest.	Lowest.	Grains.	Grains.	
Imperial Company's gas . . .	16·59	17·60	16·02	27·70	9·67	29·39	1·42	None.
Chartered Company's common gas	16·47	17·12	15·74	34·70	12·76	26·97	2·36	None.
Chartered Company's cannel gas	22·89	24·06	22·17	30·79	13·31	25·82	2·40	None.

Mean of daily readings of barometer . . . . 29·65
" " " thermometer . . . 53·43

* Each observation consists of 10 readings of the photometer, at intervals of one minute.

DR. WHITMORE'S REPORT ON THE QUALITY OF THE WATER SUPPLIED IN ST. MARYLEBONE, IN NOVEMBER, 1870:—

November, 1870.	Total Solid Matter in degrees or grains per Imperial gallon.		* Loss by Incineration of Solid Matter in previous column.		Ammonia.
	Nov., 1869. 0°	Nov., 1870. 0°	Nov., 1869. 0°	Nov., 1870. 0°	0°
Distilled Water . . .					
West Middlesex water .	18·16	18·14	0·64	0·78	—
Grand Junction water. .	18·32	18·18	0·64	0·76	—

* The loss by incineration represents the amount of organic and other volatile matters contained in an Imperial gallon (70,000 grains) of water.

The mean illuminating power of the Imperial Company's gas, during November, was equal to the light of 16½ candles, and ranged between 17·60 and 16·02 candles; on four occasions it exceeded 17 candles. The amount of sulphur impurity found in it was large; it exceeded 29 grains in 100 cubic feet of the gas. Ammonia, on the contrary, was small in quantity, and amounted to only 1·42 grains. The mean light of the Chartered Company's common gas was equal to 16½ candles, and ranged between 17·12 and 15·74 candles; on three occasions only was it below the legal standard. The quantity of sulphur found in 100 cubic feet of the gas amounted to nearly 27 grains, and the ammonia to 2·36 grains. The cannel gas gave a mean light equal to nearly 23 candles, and ranged between 24·06 and 22·17 candles; this gas contained 25·82 grains of sulphur in each 100 cubic feet, and 2·40 grains of ammonia. The pressure of all the gases was satisfactory, and in neither of them was sulphuretted hydrogen detected. The above results were obtained from the gas manufactured by the Imperial Company, at their Fulham works, and from the Chartered Company's gas, manufactured at their works, Horseferry Road, Westminster.

AVERAGE COMPOSITION AND QUALITY OF THE METROPOLITAN WATERS, IN DECEMBER, 1870.—The following are the returns of the Metropolitan Association of Medical Officers of Health:—

Names of Water Companies.	Total Solid Matter per Gallon.	Oxygen required by Organic Matter, &c.	Nitrogen.		Hardness.	
			As Nitrates, &c.	As Ammonia.	Before Boiling.	After Boiling.
Thames Water Comps.	Grs.	Grs.	Grs.	Grs.	Degs.	Degs.
Grand Junction	20·33	0·089	0·110	0·005	15·4	4·2
West Middlesex	19·17	0·065	0·110	0·001	15·0	3·6
Southwark and Vauxhall . .	19·47	0·073	0·110	0·004	15·0	4·0
Chelsea	19·40	0·144	0·110	0·005	14·9	4·0
Lambeth	21·17	0·090	0·125	0·005	15·4	4·2
Other Companies.						
Kent	26·60	0·004	0·175	0·000	20·0	5·6
New River	20·69	0·021	0·091	0·001	15·5	3·5
East London	21·11	0·041	0·125	0·002	15·6	4·2

Note.—The amount of oxygen required to oxidize the organic matter, nitrites, &c., is determined by a standard solution of permanganate of potash acting for three hours; and, in the case of the metropolitan waters, the quantity of organic matter is about eight times the amount of oxygen required by it. The water was found to be clear and nearly colourless in all cases but the following, when it was more or less turbid—viz., the Southwark and Vauxhall Company and the Chelsea Company.

The average quantity of water supplied daily to the metropolis during the preceding month was, according to the returns of the water companies to the Association of Medical Officers of Health, 101,063,124 gallons; and the number

of houses supplied was 482,880. This is at the rate of 31·1 gallons per head of the population daily. The last official return from Paris stated that the average daily supply per head of the population was 29·3 gallons; but this includes the water used for the public fountains, and for the ornamental waters in the Bois de Vincennes and the Bois de Boulogne.

H. Letheby, M.B.

Insurance of Gas-Works against Fire.—The Queen Insurance Company, of Gracechurch Street, London, and Liverpool, announce that they are prepared to insure gas-works against fire and explosion, and coals against spontaneous combustion.

Retirement of Sir Charles D. Crosley.—An announcement has been made of the retirement of this eminent stock and share broker. Sir Charles is succeeded in the business by his son-in-law, Mr. Frederic N. Golding, who is a member of the Stock Exchange. The business will be conducted as heretofore, at No. 1, Sun Court, Cornhill, London.

Village Gas Lighting.—The village of Shirland, near Alfreton, in Derbyshire, was successfully lighted with gas, for the first time, on the 16th ult. The works have been erected by Messrs. Thorneloe and Co., of London.

Testimonial to Mr. Thos. May.—A number of workmen employed at the Ramsgate Gas-Works made a farewell presentation to Mr. Thos. May, on the occasion of his relinquishing the management of those works to undertake the management of the Canterbury Gas and Water Works. The present consisted of a silver tankard, bearing a suitable inscription, expressive of the esteem and regard in which Mr. May was held by all those who had been under his control; and a very pretty card-basket, of frosted silver, was also presented to Mrs. May. One of the workmen acted as spokesman upon the occasion, and the kindest wishes were expressed that Mr. and Mrs. May, and every member of their family, might long enjoy health and happiness.

Stamford Water Supply.—Mr. Hawksley, the engineer appointed jointly by the Marquis of Exeter and the Corporation of Stamford to report upon the state of the water supply, visited Stamford last week, and, accompanied by the mayor and the deputation appointed by the Water Supply Committee, examined all the important known sources of supply in the neighbourhood on the north and south banks of the Welland, the stored-up pond at Whitewater, and the reservoirs at Wothorpe. The discharge of the inlet-pipe at Wothorpe was found to be quite inadequate at this season of the year for the supply of the town (estimated at 200,000 gallons per day); indeed, Wothorpe and Whitewater combined produced scarcely more than half the quantity. The level of the present reservoirs appears to be nearly coincident with the top of the spire of St. Mary's Church, commanding by gravitation the highest points of the borough; but if a sufficient supply of water cannot be obtained to feed them—and it is evident the present sources require largely supplementing—it is probable that pumping may have to be resorted to there or elsewhere. Mr. Hawksley also examined the Chater, a tributary of the Welland near Ketton.—*Stamford Mercury.*

The Mont Cenis Tunnel.—The completion of the Mont Cenis Tunnel is a great triumph of engineering art. It is the longest tunnel, so far as we know, that has been driven from the opposite ends with the two borings meeting with precision. From the great height of superincumbent matter over the tunnel, it was impossible to sink shafts according to the ordinary mode, so that the ventilation had to be effected from the two ends of the tunnel. The boring machines were put to work in 1861. The tunnel is over 13,000 yards, or about 7¾ miles in length, and is 26 feet 3 inches wide by 19 feet 9 inches high, which affords space for two lines of rails. The excavations were for nearly two-thirds of the distance through schist, the remainder being through limestone and very hard quartz, which caused great trouble, and occupied a comparatively long period, particularly during the latter portion of the time employed. The perforating machinery was skilfully contrived, and very beautiful in operation, being a combination of hydraulic and pneumatic power. Large reservoirs, considerably higher than the entrances to the tunnel, collected water from the streamlets and from rainfall on the Italian side. The water was sent down to a lower level by large iron pipes, supplying in the descent the power required for the boring operations; the water pressure was equal to 26 feet perpendicular. At Fourneaux we have seen the beautifully contrived air-compressing machines, the aërometers, and receivers. The action of the water (pumped up from the arc) upon the aëromeiers set the compressers to work. These compressed the air so that it exercised a pressure of 96 lbs. on the square inch. The compressed air worked the excavating machines, to which it was conveyed by strong 8-inch iron pipes. The excavating machine took out a drift 12 feet wide by 8 feet high; the remainder of the work was executed by blasting, or hand labour in the ordinary methods. The boring-machine was mounted upon wheels, and was forwarded upon a tramway. It had ten perforators, acted upon by two flexible tubes, the one conveying compressed air and the other water. The jumpers each made its own hole, and had a rapid to-and-fro motion and change of angle by the action of the power applied. The jumpers only bored for blasting, and, when the rock was ready, the boring-machine was withdrawn, secured behind folding doors, and the fuse was lighted. A blast of compressed air was then sent in to clear the smoke and sweeten the tunnel, and the miners proceeded to finish with their picks what the boring-machine had so well begun for them.—*Builder.*

Register of New Patents.

3548.—George Preston and John Prestige, of the firm of J. Stone and Co., of Deptford, in the co. of Kent, engineers, for "*Improvements in apparatus for regulating the supply of water to water-closets and other similar places.*" Patent dated Dec. 8, 1869.

The object of this invention is to regulate the closing of the water supply-tap in such a manner that when the ordinary handle or pull has been acted upon to open the tap the descent of the lever and weight which acts on the water supply-tap shall be governed and caused to fall gradually, so that the water shall flow into the basin for a short time after the ordinary handle or pull has been acted upon in lieu of stopping suddenly, as is usually the case.

The invention consists in the arrangement and employment of two cylinders or barrels placed side by side, so that a tube or passage which is fitted to their lower ends shall form a communication between them for the passage of air and oil or other lubricant. The air is drawn into one cylinder by a valve-piston, to be forced through into the other cylinder, and escape through a valve fitted thereon. The piston cylinder is furnished with a quantity of oil or other liquid lubricant for the cup-leather on the piston to dip into, in order to lubricate the same at each stroke. The upper part of the piston cylinder is sufficiently open to admit of the air entering therein and passing the edge of the cup-leather on each up stroke, so that a supply is obtained below it; and on its down stroke, which is effected by the descent of the ordinary lever and weight, the cup-leather expands and touches the inside of the cylinder, so that the air is forced through the oil and the tube or passage into the other cylinder, whence it escapes through the orifice in the air escape-valve. This other cylinder forms a lubricant receiver when the piston falls to the bottom of its cylinder. The air escape-valve is adjustable on its seat, and can be opened to a larger or less degree to limit the escape, and thus regulate the closing of the water supply-tap.

3550.—Mark French Anderson, of 15, Priory Row, Coventry, in the co. of Warwick, licentiate of the Royal College of Physicians, Edinburgh, member of the Royal College of Surgeons, England, for "*Improvements in treating sewage, and in the manufacture of manure therefrom.*" Patent dated Dec. 8, 1869.

In treating sewage according to this invention, sulphate or sesqui-sulphate of alumina is employed in conjunction with lime or carbonate of lime (chalk) for deodorizing and purifying sewage or other waters containing organic or other impurities. As commercial sulphate of alumina is too expensive to be used for purifying sewage, it may be prepared by mixing common clay (any kind of clay or earth containing clay may be used) with sulphuric acid in the proportions of two parts of clay to one of acid by weight. After the clay and acid have been thoroughly and evenly mixed, the compound is placed in a warm place until the sulphuric acid has combined with the alumina of the clay to form sulphate of alumina. The combination between the sulphuric acid and alumina will take place under ordinary temperatures, but without heat requires a longer time for completion than when the combination is assisted by heat.

3554.—Edwin Walker, of Heckmondwike, in the co. of York, plumber, for "*Improvements in gas-burners.*" Provisional protection only obtained. Dated Dec. 9, 1869.

This invention relates to certain improvements in the construction and arrangement of gas-burners, whereby a superior light can be produced from a less quantity of gas than is required for ordinary burners, all escape of gas being prevented, the consumption being perfect.

To the pipe or tube leading to the burner are attached three distinct burners, arranged as follows:—The central burner is set vertically, and the two side burners are set at an oblique angle to the central one, so as to cast a jet of gas directly from each into the central jet. These burners are arranged not in one piece, but as three separate tubes, having perforations in each nipple or light to suit the jets required, the result being that a united mass of flame of great thickness is produced by the combination of the jets, affording an extremely white light, preventing smoke, and economizing gas, the light being far superior to that generated by the use of three ordinary separate burners, each consuming a separate jet and giving a separate light.

Another example of the invention consists in forming a small receptacle in the form of a cup, having a nozzle or screw to fit on the gas-tube. The upper part of the cup is provided with a cap or dome, the centre having a vertical nipple, and the margin being provided with two nipples, one on each side of the central nipple, and forming a line therewith. These two nipples are set at an angle pointing obliquely inwards towards the jet of the central nipple, the lines of jets forming radii to a circle, and tending to meet at a central point, the result being similar to the first example.

The principle of the invention being consequently to effect the centralization of jets of gas on the condition that such jets shall issue in the same plane, it follows that more than three jets may be employed—for example, two nipples may be adjusted on each side of the central nipple, provided they are set at such an angle as to form radii to a common centre, or as nearly to such angle as may be found most expedient in practice, all being arranged to direct their jets in one plane, and not across each other. The nipples may be substituted by forming a series of apertures in the receptacle, each causing its jets of gas to flow as radii in the same manner as though nipples were used.

3558.—John Loader, of Upper Clifton Street, Worship Square, and William Henry Child, of Worship Street, both in the co. of Middlesex, for "*Improvements in liquid-meters.*" Patent dated Dec. 9, 1869.

For the purpose of this invention a pair of cylinders and a shaft or axis common to both are employed. On each end of this shaft or axis is formed or fixed a crank-pin or eccentric, and on each of such crank-pins or eccentrics is mounted a disc or piston, which is carried round thereon by the pressure of the liquid passing through the cylinders. These discs or pistons have their peripheries in contact with the inner peripheries of the cylinders, and although they are carried round in an orbit on their crank-pins, as before described, they do not make a complete revolution on their own axes, but only slightly rock to and fro thereon. A stop or abutment is connected to each of such discs or pistons by means of a cylindrical joint, which may be connected to the stop or abutment, in which case the stop or abutment will be caused to slide to and fro in a suitable slot formed for it in the cylinder. Or the stop or abutment may be rigidly fixed in the cylinder, and may pass through the two parts of a cylindrical joint working in a correspondingly formed recess within the disc or piston, a suitable space being formed within the disc or piston to receive the stop or abutment as the disc or piston is carried round on its crank-pin or eccentric, the two parts of the cylindrical joint being forced together by any suitable means so as to make a tight joint at those parts. The cylinders or the discs or pistons are provided with a number of elastic packing pieces, which are received into suitable undercut recesses formed across their peripheries, whilst if desired the sides may be rendered tight with capability of adjustment by means of a plate or disc forced up thereto by springs, screws, or other suitable means. The discs or pistons are mounted on opposite sides of their common axis. The inlet ports are situated near to one side of the stops or abutments, and the outlet ports near to the other side thereof. The two inlet ports and the two outlet ports are connected together by suitable ways or passages. On the common axis is formed or mounted a worm, which by taking into a worm-wheel gives motion to a suitable registering apparatus; or motion may be given to such registering apparatus by any other suitable means.

3581.—Alexander Angus Croll, of Coleman Street, in the City of London, civil engineer, for "*Improvements in the treatment of ammoniacal liquor of gas-works to obtain therefrom salts of ammonia.*" Patent dated Dec. 11, 1869.

In proceeding, according to this invention, to treat ammoniacal liquor of gas-works in order to obtain therefrom salts of ammonia, the ammoniacal liquor is according to one arrangement or method supplied to one of, by preference, two or more closed boilers, and thence from the first to the second, and so on, of these boilers, which are heated to cause the ammonia to pass off in the form of vapour from one to the next, and then from the last of them by a suitable passage, by which such vapour is conducted to below the surface of sulphuric acid contained in a suitable chamber, which chamber is also supplied with cold ammoniacal liquor, so as to keep down the temperature of the solution in this chamber, say, to about 200° Fahr., though this may be varied, care being taken that the heat employed shall not be such as to cause loss of the volatile salts of ammonia. The vapour of ammonia from the boiler, the cold ammoniacal liquor, and the sulphuric acid are by preference conducted together into this chamber. This chamber is sealed so that the sulphuretted hydrogen evolved may be conducted away to be burned and utilized in the manufacture of sulphuric acid, or otherwise, as may be desired, whilst the liquid in a neutral state flows therefrom in succession to a series of shallow evaporating pans, each succeeding one being placed somewhat below that preceding, to facilitate the flow from each to the next. These pans are heated so that the last of the series receives the greatest heat, or such as will cause free ebullition, and the first of them the least heat, care being taken that this first pan shall not receive a heat that shall raise the liquid to a temperature higher than about 10° to 15° below the boiling-point of the solution, the object being to employ heat in this first pan less than that at which the sulphite or other combinations of ammonia are rendered volatile, and thus conversion of the sulphite into sulphate of ammonia is accomplished by slow evaporation and exposure to the atmosphere. From the last of these pans the liquid, if not sufficiently concentrated to crystallize by fishing out the salt, may flow into an open boiler or trough kept at the boiling-point, by pre-

ference by steam, and when the crystals of sulphate of ammonia are formed they are fished out, or when the liquor is at a crystallizing point it is allowed to flow into a cooling vessel for crystallization in the usual way, and with the view of still further obtaining a dry salt, or a salt free from moisture, the salt is placed in a centrifugal machine, by which a dry salt is immediately produced. In employing centrifugal apparatus for this purpose, care should be taken that the parts exposed to the action of the salt be coated with metal not extensively acted upon by the salts of ammonia.

According to another arrangement or method the ammoniacal liquor from gas-works is supplied to a closed boiler heated to cause the liquor to pass off in the form of vapour by a suitable passage to a vessel containing sawdust saturated with sulphuric acid, and thence to other vessels in succession similarly provided. Each of these vessels is formed with a chamber at the lower part thereof, which is separated from the upper by a perforated partition. The ammoniacal vapour in each case passes first into the lower chamber, and thence through the perforations of the partition forming the cover of that chamber into the chamber above containing the saturated sawdust through which it passes, becoming in its passage in part absorbed by the acid held by the sawdust. The ammoniacal vapour from the first vessel passes away at the upper part to a similar chamber to that described in the lower part of the next of them, and so on until the vapour is sufficiently exhausted of its ammonia; or chambers may be employed having in them trays containing layers of the sawdust, saturated as described, to be acted upon by the vapour of ammonia, such trays with their contents being capable of being changed in succession, so that the tray containing the freshest material may be that from which the vapour last passes, and that which has been longest acted on is that which first receives the vapour, care being taken that the quantity of vapour of ammonia passing through these chambers in relation to the quantity of material to act on it be such as fully to absorb the ammonia before the vapour leaves the chambers. The form of these chambers and the passage therethrough may be varied. These chambers are by preference surrounded by a non-conducting jacket, so as to retain the temperature of the vapour as much as possible. The strength of acid and the mode of combining such acid with sawdust preferred to be used is that described in patent No. 1759, dated July 14, 1864. The result is that the sawdust becomes highly saturated with sulphate of ammonia, and is valuable as a manure or for other purposes. The sulpuretted hydrogen arising from this process may be burned or otherwise.

Similar results may be obtained when using any of the materials described in patents No. 1647, dated July 2, 1863, and No. 2883, dated Nov. 18, 1864.

When chlorides are used, the salt obtained will be a muriate of ammonia, and when sulphates or sulphuric acid is used, the salt obtained will be a sulphate of ammonia, the crystals being readily obtained by washing, as is well understood.

3618.—William Collett Homersham, of 2, Willes Road, Kentish Town, in the co. of Middlesex, civil engineer, for "*Improvements in pipes and conduits, and in the joints thereof.*" Patent dated Dec. 15, 1869.

These improvements consist in gradually thickening the spigot end of the pipe externally for at least the whole length of the joint while preserving the bore of the pipe uniform throughout, and in making the faucet end of the pipe with its internal surface parallel or nearly parallel with the external surface of the spigot when fitted in its place. When not parallel, the widest part of the space between the spigot and faucet is towards the outside of the joint, that form of packing giving less rigidity to the joint; or the internal surface of the faucet may be made parallel to the bore of the pipe, and an internal lip be formed at the outer end of the faucet.

3619.—Nicholas Procter Burgh, of 78, Waterloo Road, in the parish of Lambeth, in the co. of Surrey, engineer, for "*An improved double or single acting pump.*" Patent dated Dec. 15, 1869.

According to this invention the valves are so situated in relation to the plunger or piston that the cause of supply or admission and discharge into and from the barrel of the pump is equal in any case when the supply and discharge openings are above or below or on either side of the piston of the pump singly or together. The mechanical arrangement of the valves in relation to the piston or plunger is subject to the principle of hydraulics—that is to say, that when any volume of fluid and air intermingled becomes compressed, the air being the lighter, ascends, and the efficiency of any ordinary pump, therefore, consists chiefly in the discharge of the air before the fluid.

3634.—Joseph Heap, of Hampstead Road, in the co. of Middlesex, carpenter for "*Improvements applicable to earth-closets or commodes and urinals.*" Patent dated Dec. 16, 1869.

These improvements consist in making the reservoir for containing the deodorizing material hopper-shape, the bottom portion being reduced in size and made parallel. This hopper is protected by a wooden frame, to which it is suspended at each end by means of a pivot or trunnion passing through the iron frame at the top; the front of the hopper beneath the foundation-board is open. This opening can be extended or diminished in size to regulate the quantity of earth, &c., necessary to be thrown out each time. The shoe or shoot at the bottom of the hopper is regulated in length according to the opening, so that when the earth, &c., recedes from the hopper, the shoe or shoot will retain it until the handle is raised, when a charging of earth is thrown out upon the matter in the vault or receptacle as the case may be.

3650.—George Weir, of Glasgow, in the co. of Lanark, N.B., engineer, for "*Improvements in slide-valves.*" Partly communicated. Patent dated Dec. 17, 1869.

This invention consists in arranging the parts so that the steam of full pressure, or that which is on its way to the cylinder, tends to press the valve from the port face, the exhaust being led away in the ordinary way, or otherwise, whilst steam of a suitably regulated pressure, and necessarily lower than the full pressure, is contained in the casing, and bears on the outside of the valve so as to just keep it to the port face.

3666.—William Potts, of Handsworth, in the co. of Stafford, manufacturer, for "*An improved apparatus for effecting or promoting the ventilation of rooms or buildings, and for preventing down draught in chimneys.*" Provisional protection only obtained. Dated Dec. 18, 1869.

This invention consists of a conical cap or cowl surmounted by a vane, which said cap or cowl turns on a central spindle or axis fixed in a tube or chimney terminal, the upper end of which is made of a funnel shape, in order to promote the escape of the hot air or smoke. On the windward side of the cap or cowl is formed a curtain or wind-guard, which extends half way round the said cap or cowl, and prevents the wind from blowing into the cap or cowl between the lower edge thereof and the upper edge of the funnel-shaped portion of the tube or terminal aforesaid.

3667.—Richard Nevill, of Wern Iron-Works, Llanelly, in the co. of Carmarthen, South Wales, for "*Improvements in the manufacture of retorts and annealing-pots and stands.*" Provisional protection only obtained. Dated Dec. 18, 1869.

These improvements consist in forming such articles of wrought iron welded into the desired forms, whereby ligthness, efficiency, and durability are obtained. The mode which has been found to answer in making retorts and annealing-pots consists in taking a plate of iron sufficiently long to pass round the sides of the article, and so as to meet at one corner, where the ends may overlap, or where they may leave an angular space into which is introduced, if necessary, a strip of iron. The parts are then heated, and welded together so as to produce a tube open at both ends. A plate of iron is then employed, formed to the shape required to form the end or top, and to overlap the end of the tube.

3681.—George Newsum, of Hunslet, Leeds, in the co. of York, machinist, for "*Improvements in means or apparatus for pumping.*" Provisional protection only obtained. Dated Dec. 20, 1869.

According to this invention two pistons and cylinders are employed, each of the cylinders being in communication at the lower end with a separate pipe or way, whilst at the upper end each cylinder is in communication with the pipe or way communicating with the lower end of the other cylinder. Valves are employed at the lower ends of the cylinders, as is well understood, but the upper ends of the cylinders have no valves, but the top of each cylinder is always in communication with the pipe or way connected to the bottom of the other cylinder.

3682.—George Thomas Livesey, of the South Metropolitan Gas-Works, Old Kent Road, in the co. of Surrey, for "*Improvements in apparatus used in the manufacture of gas.*" Patent dated Dec. 20, 1869.

This invention relates to improvements in hydraulic valves adapted to many purposes, but especially designed for use in gas-works, and consists, firstly, in the construction of valves for purifier or other use, whereby perfect soundness is obtained; and secondly, to a valve or valves, seal or seals, by means of which greater facilities are given for the cleansing of or removal of obstructions from the inlet and outlet pipes of gasholders.

The following is a description of the valve first referred to:—A rectangular, oval, round, or other suitably formed chamber, A, is constructed of cast iron or

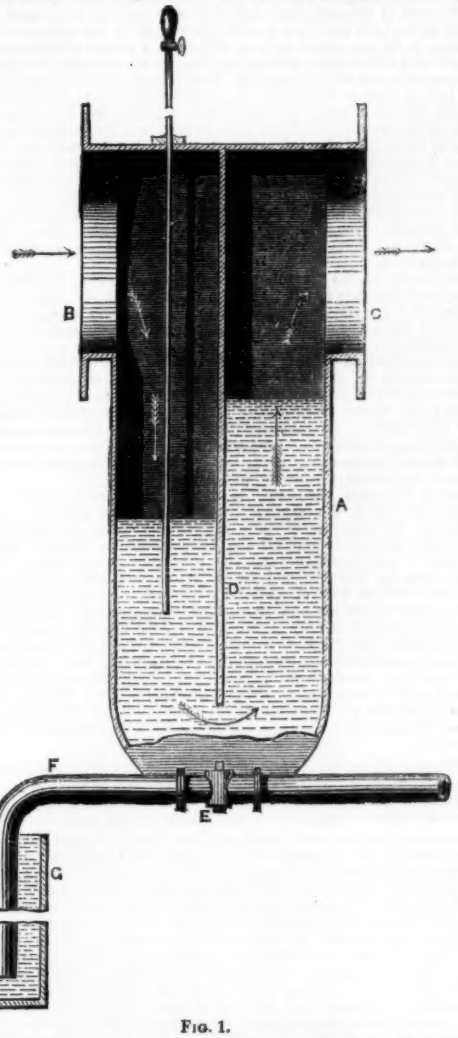

Fig. 1.

other material, closed both at top and bottom, having inlet and outlet openings B and C, on opposite sides near the top, but divided from each other by a diaphragm, D, which extends from the top of the chamber to within a short distance of its bottom. At or near the bottom of the chamber a three-way cock, E, is attached, one of the ways of such cock being in communication with a pipe or tube, F, leading to a cistern containing water, which is kept at a uniform level by means of a ball-cock, or other suitable contrivance, while the other way or outlet of the cock is made to dip into a seal cup, G. So long as the cock is turned from the water the valve will remain open, and the gas will pass from the inlet into the chamber, dip beneath the diaphragm, and pass on to the outlet. When it becomes necessary to close the valve the cock is simply turned on to the cistern, when the water will flow into and rise in the chamber to such a height as to form an efficient seal, and cut off all communication between the gas inlet and outlet pipes. In Fig. 1, the valve is shown charged with water, and consequently shut. To re-open the valve, the cock must be turned off from the cistern when the water in the chamber will run off by the outlet way of the cock, and thus re-establish a communication between the gas inlet and outlet, the gas then passing in the direction of the arrows. These valves are well adapted for being worked in groups, and are specially adapted for purifier use, any number being supplied from one tank or water cistern.

In lieu of the foregoing arrangement a U-shaped pipe may be used, and instead of the three-way cock two ordinary cocks may be employed. The form before described is, however, preferred.

The mode of constructing, in the manner preferred, the second form of hydraulic valve or seal adapted for gasholder use is exhibited in Fig 2, and is as

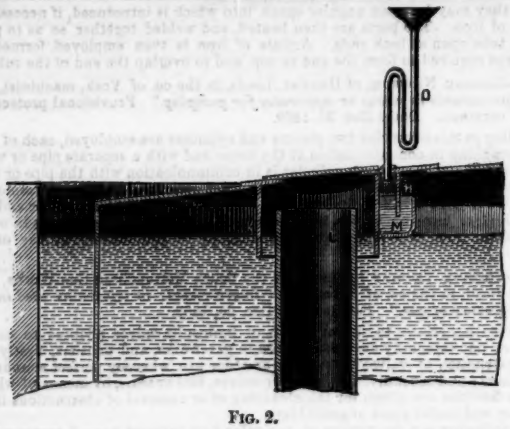

FIG. 2.

ollows:—Over and surrounding the inlet and outlet pipes, J, of the gasholder and their corresponding man-lids, a ring of sheet iron, K, is attached to the under side of the roof of the gasholder, and of such a depth as to dip into the water contained in the tank and form a sufficient seal when the gasholder is landed. An opening, L, in the upper part of this ring is formed proportionate in size to the inlet and outlet pipes, and below the opening attached to the ring, and forming part of it, is a water-trough, M. Immediately over this water-trough, and parallel to it, a piece of sheet iron, N, is fixed vertically to the roof of the gasholder, the ends of it being bent and fastened to the ring before mentioned on each side of the opening, the lower edge dipping into the water-trough, but not reaching to the bottom thereof. Outside the gasholder and over the water-trough an S-pipe, O, with a funnel head, is fastened, and on the interior of the ring a small orifice, P, is made at a height corresponding to and communicating with the bottom of the water-trough, an arrangement being made to close the said orifice either by a plug or cock, which may be operated upon by means of a spindle working through a gland in the top of the gasholder. Or the cock may be placed on the exterior side of the gasholder, and communicate by a pipe with the trough.

A modification of the foregoing, and one equally well adapted for use in some situations, consists in extending the water-trough all round the exterior circumference of the ring before alluded to, a second ring of sheet iron of such diameter and depth as shall dip into the water-trough being fixed to the roof of the gasholder.

Another modification consists in forming a ring water-trough independent of and unattached to the gasholder, but surrounding and supported from the top of the inlet and outlet pipes by hooks, straps, bolts, or other suitable means, the lower and inner circumferential edge of the trough being constructed so as to dip into the water in the gasholder-tank sufficiently to form a seal, or the trough may be cast with and form part of the pipe or pipes, the sheet-iron ring described as the "second ring" in the last paragraph being in this case retained. This form of apparatus is, however, not claimed.

As before described, the valve is open and no seal exists. To close the valve or effect the sealing as shown in the drawing, all that is necessary is to pour water into the funnel until it fills the trough or rises high enough to cut off the communication between the gas in the crown of the gasholder and the inlet and outlet pipes. The man-lids may then be removed and ready access obtained to the inlet and outlet pipes without fear of any gas escaping from the gasholder or the ingress of atmospheric air and the danger of forming an explosive mixture. To open this valve, it is only requisite to replace the man-lids and open the cock in connexion with the water-trough when the water will flow away, destroy the seal, and re-establish a communication between the inlet and outlet pipes and the gasholder. Separate valves may be applied to the inlet and outlet pipes, or one may be used surrounding both, as described. And although sheet iron is frequently spoken of in the foregoing as the material employed, it is to be understood that any suitable material may be used for the construction of the various parts.

3690.—WILLIAM GALLOWAY, of Francis Street, in the co. of Middlesex, mining engineer, for "*Improvements in joints or couplings for pipes, rods, and other like articles, which improvements are also applicable for stopping pipes, bottles, casks, and similar receptacles.*" Patent dated Dec. 20, 1869.

In carrying out this invention certain combinations of bayonet and union joints for pipes, couplings, and stoppers are employed. One modification applied as a joint or coupling consists of external and internal screwed pieces, the internal screwed piece forming the socket for the reception of one end of one of the two parts to be jointed or coupled together, whilst the external screw is formed on or carried by the end of the corresponding part to be jointed or coupled. The socket or internal screwed part above referred to remains always screwed on to or is in connexion with the external screwed part, and is combined with a bayonet joint or other convenient locking arrangement, whereby the end of one of the pipes or parts to be coupled can be readily inserted into the socket, and by a slight turn, either of the pipe or of loose lugs on the same, or of the internal screwed piece, the said pipe is locked in its socket, and the joint is then tightened up by an additional slight turn of the pipe and internal screwed piece together, or of the internal screwed piece alone in some cases, or of the internal screwed piece together with the loose lugs.

3719.—ROBERT SPEAR, of New Haven, Connecticut, U.S.A., for "*Improvements in pneumatic engines for raising water, more especially designed for draining mines.*" (Complete specification.) Patent dated Dec. 23, 1869.

In the side of the cylinder, near or at its bottom, is a man-hole for the purpose of cleaning the cylinder of any dirt and settlement settling within the same from the water, this man-hole being closed in any suitable manner. Near the bottom, on one side of the cylinder, is the inducting water-valve, and on the opposite side, at the same height, is the educting water-valve connected with the pipe to carry or raise the water to any desired height. The inducting valve is so constructed as to open inwards, and allow free ingress to the water, but will close to any pressure from the inside preventing the water from passing out through the same.

3736.—WILLIAM ROBERT LAKE, of Southampton Buildings, London, consulting engineer, for "*Improvements in the manufacture of metal tubing.*" A communication. Patent dated Dec. 24, 1869.

In all other machines for making wrought-metal welded tubes only one pair of rolls, or a series of two or more pairs revolving in the same plane are used, and consequently there is a tendency of the tubes to spread as they pass between the rolls, and form a fin at each side. To overcome this difficulty one or more pairs of rolls is placed at right angles to and in advance of each pair first mentioned, whereby the fins are pressed down, and the tubes are made of regular form.

3742.—HENRY JOHN GIRDLESTONE, civil engineer, and JOHN WARD GIRDLESTONE, civil engineer, both of 37, Norfolk Street, Strand, in the co. of Middlesex, for "*Improvements in 'dry' closets, commodes, and urinals.*" Patent dated Dec. 24, 1869.

This invention consists partly of a bottomless reservoir containing disinfecting, deodorizing or absorbent substances. The reservoir is usually provided with two trunnions or pivots, one of which is usually placed above the middle and towards the back of each of the sides of the reservoir. The reservoir is usually freely suspended by means of these trunnions in bearings situated at a convenient height in the framework of the closet or urinal.

3756.—ALFRED UPWARD, of the Chartered Gas Company, 146, Goswell Road, civil engineer, JAMES BANNEHR, of Great Queen Street, sanitary engineer, and the Rev. THOMAS PELHAM DALE, of 6, Ladbroke Gardens, Notting Hill, all in the co. of Middlesex, for "*Improvements in the manufacture and purification of gas, and in the utilization of waste and bye products of gas-works.*" Patent dated Dec. 28, 1869.

This invention has for its object improvements in the manufacture and purification of gas, and in the utilization of the waste and bye products of gas-works.

In the manufacture of gas, coal (or other solid gas-making material) is used in a finely powdered state, and caused to be carried by a current of gas into a highly heated pipe or retort, where the coal or other material yields up the gas, and the coke which remains is collected in a suitable chamber. A portion of the gas is drawn off to be purified for use, whilst a further portion is taken to form the current requisite to carry the powdered coal or material through the heated pipe or retort. Liquid gas-making materials may be similarly employed. Clay or cast iron retorts set vertically are used, and may be 15 or 18 inches in diameter, and 18 feet high. Beneath the retorts there is a chamber to receive the coke resulting from the gas-making materials, and at the upper ends of the retorts is the connexion with the hydraulic main. At the bottom of each retort in the chamber already mentioned is a nozzle, from which a powerful jet of gas is caused to issue, and the powdered coal or gas-making material is fed forward along a trough by a screw, and is dropped or liberated immediately over the jet, the force of which is adjusted so as to carry it up the retort nearly to the top, and then allow it to fall back and descend into the chamber beneath the retort, whence as powder, coke, or breeze, it is removed from time to time. The quantity of gas-making material thus passed continuously through the retort should be, at least, as much as would in the ordinary process of gas-making be applied by successive charges to an equal area of retort surface. The gas to furnish the blast is drawn from the hydraulic main by means of air-pumps. Oil or other liquid gas-making material may be similarly operated upon. The retorts may be heated by means of a gas-furnace, or a furnace adapted to burn powdered fuel with a blast of air, and the breeze or powdered coke from the chamber at the bottom of the retorts may be thus burnt.

The claim as respects this part of the invention is for the manufacture of gas from powdered or liquid materials, by causing them to be carried by a current of gas along a heated retort or tube, substantially as described. When in this or in the ordinary manner coke is burnt for heating gas-retorts, a fine shower of water is caused to pass down the chimney-shaft, which, coming in contact with the sulphurous and sulphuric acid proceeding from the furnaces, produces a weak acid containing considerable heat. This heat is availed of by conducting the dilute acid by means of coils of lead or other suitable pipes through an air-warming chamber or channel, through which a current of air is caused to pass. Here the liquor parts with a large portion of its caloric, and it is then conducted by pumping to an elevation in the chimney-shaft to be raised, and thus acquiring an additional strength of acid. By repeating the process of resaturation several times, a dilute acid may be obtained, containing, say, 30 per cent. of real acid. This is then run off for use and replaced by water. When insufficient air has passed through the furnace to convert sulphurous into sulphuric acid, we direct a current of ozonized air into the gases resulting from the combustion of the furnace fuel, in order, as far as possible, to convert sulphurous into sulphuric acid. The above acids are mixed with the ammoniacal gas liquor in such proportions that the liquor shall be rendered slightly acid. The admixture is to be made gradually, the acid being added slowly and the liquor kept constantly agitated by means of a mixer, the process being carried on in an apparatus constructed so that the gases eliminated, which consist mainly of sulphuretted hydrogen and carbonic acid, may be collected in a gasholder. These gases are subsequently burnt in a suitable arrangement, and the principal products of their combustion, being sulphurous acid mixed with carbonic acid, are carried forward and brought in contact with a quantity of unburnt gases of the same kind, taken either from the same or from another gasholder. These mixed gases should be carried into or through a column or tower in which there is a fine shower of water falling. For every volume of gas burnt two volumes of unburnt gas should be supplied for mixture with the products of combustion. It is desirable, if not necessary, that the combustion of the gases should be assisted or kept up by passing them into or through an ordinary gas-flame, or an ordinary fire supplied with only sufficient air to support combustion. From the mixture of the burnt and unburnt gases sulphur is obtained, and it is allowed to subside from the water by which it is collected in the column or tower, or the whole of the gases may be passed through a fire well supplied with air and then in contact with water, when dilute sulphuric and sulphuous acids would be obtained.

The claim, as respects this part of the invention, is the use and application of the waste products of the gas manufacture, substantially as described.

In place of the foregoing the process adopted for the purification of gas may be modified as follows:—Gas liquor is treated with sulphurous acid preferably until the liquid smells strongly of sulphurous acid; a slight precipitation of sulphur takes place, which may be allowed to settle out. A purifier or scrubber is then charged with the above-named sulphurous liquor and foul gas passed into it; the sulphuret of ammonia and sulphite of ammonia mutually react on one another, and the gas passes forward to the next purifier, where it may be similarly treated, and so on to as many purifiers as may suffice to ensure a sufficient separation of sulphur compounds.

As described above, the process is intermittent, but if a double purifier or purifier divided by a partition, or two purifiers communicating by a pipe or otherwise be used, it may be made continuous by treating one side or division or section of the purifier with a stream of sulphurous acid gas, whilst the gas passes through the other side, the liquor being kept in constant agitation or circulation from one side, division, or section of the purifier to the other by suitable contrivances. The resulting liquor in the purifier or purifiers may be drawn off when of any desired strength, fresh liquor or water being added, and this addition may take place continuously or intermittently.

The process may be further modified by combining several purifiers containing different strengths of liquor, and passing the liquors as they become exhausted of sulphurous acid from one purifier into the other, as may be desired, the gas passing in succession through the purifiers in the opposite direction to the passage of the liquors.

In order to separate remaining acid the gas may undergo one or other of the following processes:—

Process A.—It may be passed through a lime or other alkaline purifier charged in the usual way. If the first process be skilfully conducted, the lime or alkaline purifier will after use contain hyposulphites of lime, or such other alkaline base as it was originally charged with, and these hyposulphites and other resulting sulphur salts may be separated by the usual methods.

Process B.—The last traces of acid may be taken out by using a peroxide of iron purifier, previously rendered alkaline with ammoniacal gas liquor; by this process the gas will pass forward slightly alkaline with ammonia. This again might be remedied by using two peroxide purifiers in succession, the last rendered slightly acid, or better still, containing moist proto-salt of iron or by a scrubber in the usual manner.

It will be seen that it is recommended that the gas liquors treated with sulphurous acid should be acid when put into the purifier, but this is not essential; neutral, and still better, alkaline sulphite of ammonia, will serve to purify gas.

The claim as respects this part of the invention is the use of ammoniacal gas liquor treated with sulphurous acid to purify gas, substantially as described.

To evaporate the solutions, consisting mainly of sulphate of ammonia, which result from the purification of gas, an enclosed chamber is provided, which is crossed by fanes or pendent plates, which are suspended from tubes slotted at the point of junction the entire length. At frequent intervals the already treated liquor is forced by pressure through the tubes so as to be dispersed in spray over the surface of the vanes and on the bottom of the chamber. A constant current of air warmed by radiation from the pipes containing the dilute acid before mentioned is constantly forced into and through the evaporating-chamber; it takes up the water with which it comes in contact, and then is either discharged into the atmosphere or used in the retort-furnaces. By repeating the applications of spray and evaporating the water resulting from them many times, successive deposits of sulphate of ammonia will accumulate in the evaporating-chamber; this is removed at intervals.

The claim as respects this part of the invention is the evaporating solutions resulting from the purification of gas, in the manner substantially as described.

3771.—JOHN RICHARDSON WIGHAM, of Albany House, Monkstown, in the co. of Dublin, Ireland, gas and lighthouse engineer, for "*Improvements in gas-burners for illuminating beacons, buoys, and lighthouses.*" Patent dated Dec. 30, 1869.

In patent No. 945, dated April 4, 1865, was described a mode of illuminating lighthouses by means of combustible gas produced from bituminous matters, &c., and a mode of burning such gas by a peculiar construction of burner, which is called a "crocus burner," consisting of a cluster of jets, having below them an equalizing cylinder, and just above the tops of the flames an "oxidizing cylinder," for producing perfect combustion.

The present invention consists in employing, in place of such cluster of jets for the combustion of gas in lighthouses, annular burners of about 3½ inches external diameter, or approximating as near as may be to the size of the ordinary 4 and 3 wick oil-lamps used for the dioptric apparatus in lighthouses, such annular burners having small holes or slits, through which the gas issues on the principle of ordinary Argand burners, and surrounding which annular burners, or reaching nearly down to the tops of the flames whereof, cylinders or chimneys are arranged, in order to produced more perfect combustion.

Another part of this invention consists in the conversion into gas-burners of the ordinary 2, 3, 4, and 5 wick oil-lamps used in the dioptric apparatus of lighthouses. This is effected by the conversion of the annular spaces in the burners of such lamps at present occupied by the wicks into chambers for gas having slits or holes of the usual construction, and the whole being surrounded by a chimney.

Another part of this invention consists in employing, for the illumination of lighthouses, gas-burners consisting of two or more concentric rings of any suitable diameter, pierced with holes or slits through which the gas issues, somewhat similar to ordinary Argand burners, surrounding which concentric ring-burners, or reaching down nearly to the tops thereof, chimneys or cylinders are arranged, in order to produce more perfect combustion.

3782.—THOMAS FRANCIS FRANCE, of Wigan, in the co. of Lancaster, plumber' for "*Improvements in the construction of baths and water-closets.*" Patent dated Dec. 31, 1869.

These improvements consist mainly in casting or otherwise forming round the top edge of the bath or closet a trough, gutter, or channel, the outer edge of which is somewhat higher than the inner edge thereof, or of the bath or closet itself, and in providing such trough, gutter, or channel with a waste-pipe in connection with the ordinary discharge-pipe of the bath or closet, so that any water which may escape over the top edge of the bath or closet may be caught in the trough, gutter, or channel and carried off by means of the waste-pipe before mentioned in connexion with the ordinary discharge-pipe of the bath or closet; the water escaped into the trough, gutter, or channel may be carried off by the waste-pipe before mentioned into another course.

3.—STEPHEN HOLMAN, of 10, Laurence Pountney Lane, in the City of London, engineer, for "*Improvements in apparatus for hinging, adjusting, and fastening gas retort-lids, covers, or doors, and other lids, covers, and doors.*" Patent dated Jan. 1, 1870.

This invention consists mainly in making and applying eccentric or differential pins or bolts to cross-bars and lugs used for the purpose of securing the lids or doors to the mouthpieces of gas-retorts (particularly for securing Morton's patent self-sealing lids, dated Feb. 24, 1869, No. 575).

In order to effect a sound sealing of the mouthpiece of the retort with great facility, and at comparatively little cost, two lugs are constructed, one with a catch at its outer end, and the other with an eye or half joint at the outer end, the latter having a hole therein to receive the small bearing of an eccentric or differential pin or bolt. The cross-bar is made with a hole at one end to receive the large bearing of the eccentric or differential pin or bolt, and is made to bear on the half-jointed lug aforesaid; the other end of the cross-bar rests on the lug which forms the catch. The eccentric or differential pin is put through both the cross-bar and the jointed lug, having a nut or other fastening at the bottom to prevent the pin from working out, and at the same time leaving the pin sufficiently free to work both in the jointed lug and the end of the cross-bar. On the top of the eccentric or differential pin a lever is formed or connected for the purpose of turning it around in the joint, which operation of turning around (by reason of the eccentric action given to it) fastens the lid or door to the mouthpiece of the retort when turned in one direction, and releases it when turned in an opposite direction.

In order to compensate for wear, and for the purpose of adjustment the lid or door is attached to the hinged cross-bar by means of a flat centre-piece, riveted or otherwise secured to the lid or door, and having a hole made in the same to receive the larger bearing of an eccentric or differential adjusting pin or bolt; and a corresponding hole is made near the centre of the cross-bar to receive the small bearing of the adjusting pin or bolt. On turning the adjusting pin or bolt around, the lid and cross-bar will be moved from or towards each other to any relative position within the range of the eccentric movement given by the differential diameter of the pin or bolt. Whenever the desired adjustment is effected it is preferred to screw up the adjusting pin or bolt so as to bring the cross-bar and flat centre-piece tight together; the said pin or bolt may, however, be set tight in either the cross-bar or centre-piece, and allowed to work freely in one or other of the said holes. The adjustment of the lid or door to a proper position for tightening up by means of the lever eccentric may also be effected by having a shifting screw bolt or stop to work in a suitable slot in the lug, centre-piece, or cross-bar. The action of the eccentric or differential pin will cause a proportionate lateral traverse in the operation of fastening and releasing the lid or door; this will have the effect of removing extraneous grit or other substances that might occasionally get between the surfaces (or between the bearing edge of a Morton's patent lid and the mouthpiece); the lateral traverse can, however, be entirely prevented (when desirable) by elongating one of the holes in which the lever eccentric pin works.

Modifications may be made without departing from the principle of this invention. The lever eccentric or differential pin may be applied at the middle instead of at the end of the cross-bar, as above described, or an eccentric or differential pin may be applied to one or both lugs to act against the edge of the cross-bar at one or both ends (if at both ends the cross-bar would not be hinged, but merely rested on the lugs), and other minor variations may be practicable.

The particular novelty claimed is the powerful application of eccentric or differential pins or bolts, substantially for the purposes herein described.

FIG. 1.

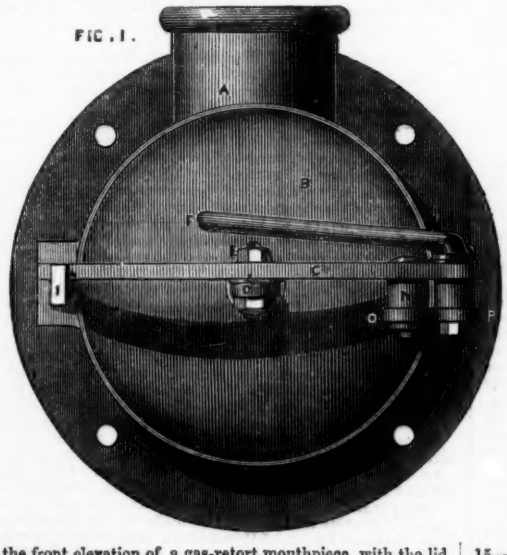

FIG. 2.

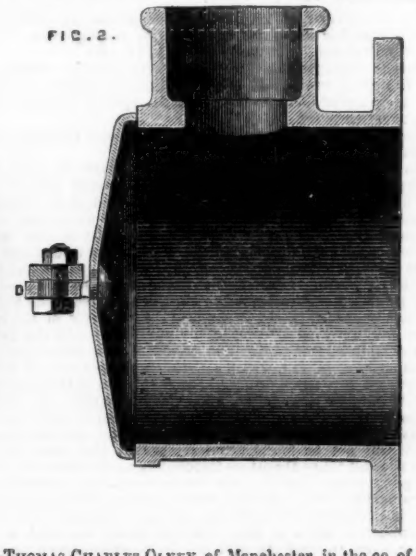

Fig. 1 represents the front elevation of a gas-retort mouthpiece, with the lid and fastenings in the positions which they occupy when the lid is closed on the orifice or mouth of the retort. A shows a cast-iron mouthpiece; B shows a Morton's patent lid; C is a cross-bar, to which the lid is attached by means of a stud, D, and secured by an eccentric or differential adjusting pin or bolt, E (shown also in Fig 2 with cross-bar in section); F is a lever having an eccentric or differential joint pin or bolt all in one piece. The large or eccentric part of the pin or bolt is made to work in a hole formed in one end of cross-bar, C; the smaller part of the pin or bolt works in the hole of the jointed lug, G, which lug is fixed in the ear of the mouthpiece by means of the cotter, H, or other convenient mode of fastening. Sufficient freedom is allowed at the joint for the plain end of the cross-bar to be readily lifted in or out of the catch, I.

In these illustrations Morton's patent lid is shown, but the fastenings described are applicable to other lids, covers, and doors. By the adoption of this invention much time, labour, and gas are economized, and much wear and tear prevented by reason of the lids and cross-bars being hinged, so that no delay occurs in closing the mouthpiece, and no damage occurs by the rough usage consequent upon the prevailing practice of throwing the lids and cross-bars loosely about when lifted away hot from the retort.

15.—THOMAS CHARLES OLNEY, of Manchester, in the co. of Lancaster, for "*An improved gas-stove, part of which is also applicable to blow-pipes and forges.*" Provisional protection only obtained. Dated Jan. 3, 1870.

The improvement in the manufacture of gas-stoves consists in the novel employment and use of one, two, or more layers or sheets of wire gauze, perforated fire-clay, or other suitable perforated material placed one above another at or near the bottom in the flue or tube of the stove and above the ordinary gas-jets, so that as the gas passes through the series of layers or plates, and a light is applied above the layers, a flame is first produced or formed on the top layer or portion, which may be made of platinum wire gauze, or other suitable material (so as to resist oxidation), which gradually becomes red hot, and is maintained at a red or incandescent heat, so that a chemical action takes place which causes perfect combustion to ensue.

20.—FREDERICK FOSTER, of Lansdowne Cottages, Essex Road, Islington, in the co. of Middlesex, for "*Improvements in instruments for measuring fluid or other pressure or weight.*" Patent dated Jan. 3, 1870.

These improvements consist in the employment of a small chamber to which steam (or it may be other fluid, of which the pressure is to be measured) can be admitted. This chamber is capable of being connected with the boiler or other

vessel containing the fluid by a screw coupling, and couplings of various sizes are provided, one or the other of which will suit any ordinary pressure-gauge nozzle.

35.—ISHAM BAGGS, of High Holborn, in the co. of Middlesex, practical chemist, for "*Improvements in purifying coal gas.*" Provisional protection only obtained. Dated Jan. 5, 1870.

This invention consists in the more thorough and complete purification of coal gas from sulphur. When coal gas has been purified by ordinary means there remain certain obstinate compounds of sulphur, principally bisulphide of carbon, which have been hitherto very difficult of removal, and which cause great injury to property wherever the gas is burnt.

The invention mainly consists in altering or decomposing these residual compounds at common or boiling temperatures, so as to render the sulphur readily removeable. This is variously effected by electricity, by oxidating, bleaching, or reducing solutions or materials, or by the introduction of a third substance, as a metal, into the purifying medium.

In some cases it is accomplished by directly absorbing the sulphur impurities by substances for which they have affinity, as sulphur or caoutchouc, or by basic sulphides, so as to produce sulpho-salts.

38.—EDMUND EDWARDS, of 22, Buckingham Street, Adelphi, in the co. of Middlesex, for "*Improvements in cocks and valves.*" Patent dated Jan. 5, 1870.

In carrying out this invention a chamber of suitable form is employed, made by preference of metal, earthenware, or glass. In the interior of this chamber is formed a seat, upon which a valve rests or is forced. The chamber has openings for the entrance and exit of the fluid passing through, and where these openings are in the same line (as when the stop-valve is introduced into a line of pipe or tube), the valve-seat is usually made at an angle with the central line, by preference of about 40°. The edges of the valve-seat are made at an angle of about 45° with the central line of the valve, so that when the valve is introduced it may rest upon the seat and make a tight joint when pressed down. This valve consists of a disc or plate, having a groove round its edge, in which a ring of some material softer than the seat formed in the chamber is held by its own elasticity, the groove being so shaped (as hereinafter described) that its upper edge may not injure the soft ring when it is pressed down.

47.—GEORGE DOMINICUS KITTOE and PETER BROTHERHOOD, both of 56, Compton Street, Clerkenwell, in the co. of Middlesex, engineers, for "*Improvements in the packing of pistons, glands, pipe and other joints.*" Patent dated Jan. 6, 1870.

These improvements consist in fitting in a recess or groove in the working surface a metallic, or in some cases a hard wood ring, which is split and tongued, or it may be several split rings arranged so as to break joint, and behind these rings are placed a double-flanged ring of caoutchouc or other elastic substance, the flanges of such ring being made to bear against the sides of the recess, and the face of the ring bearing against the back of the metallic or hard wood rings.

67.—WILLIAM HENRY HUGHAN, of Newton Stewart, N.B., postmaster and guano and seed merchant, for "*Improvements in the treatment of nightsoil, sewage, urinous superphosphates, gas-lime refuse, and other refuse matters, for the purpose of deodorizing, of obtaining manure, and of diluting acids with urinous mixtures.*" Patent dated Jan. 8, 1870.

These improvements consist in the substitution of the above-mentioned refuse matters for the water commonly employed in the process of the manufacturing of superphosphates for manures, and for other purposes.

78.—JOHN EDWARD LIPSCOMBE, of 8, Alexander Street, Salford, in the co. of Lancaster, filter manufacturer, for "*Improvements in filters or other apparatus for the purification of water or other liquids under high pressure.*" Provisional protection only obtained. Dated Jan. 11, 1870.

These filters are constructed of cast or wrought iron chambers of various forms and dimensions. They are chiefly elliptical or spheroidal hemispheres, or else cylindrical chambers (the several parts in each case being bolted together), and having an orifice at the apex for emission, and an orifice in the base or in the side near the base for the reception of the liquid.

80.—EDME AUGUSTIN CHAMEROY, of 23, Boulevard de Strasbourg, in the city of Paris, for "*Improvements in means and apparatus for gauging or regulating the flow of water or other liquids.*" Patent dated Jan. 11, 1870.

This invention consists in remedying the irregularities at present existing in the supply of water to houses, works, and other localities by causing the flow from the orifices of the gauge or meter to be constant in spite of the variations of pressure in the distribution pipes.

The apparatus is independent of the supply-pipe, in which case the gauge acts in free air, and the gauge acts under pressure.

The meter consists of a supply-pipe passing into a reservoir, in which is a float rising and falling over a circular pipe leading from the upper part of the said reservoir to the under part thereof; from the top of the float a rod passes to the distributing nozzle of the meter, which nozzle is fixed to the end of a pliable pipe in communication with the water in the upper part of the reservoir, so that the difference between the level of the water at the orifice and the level of the water in the upper part of reservoir is always the same, and this reservoir is facilitated by attaching a float to the handle of the supply-cock, so that when the water reaches a certain height no more is admitted. The water, on issuing from the supply nozzle, passes direct into the reservoir of the consumer in a constant and unvaried stream, totally uninfluenced by the variations of pressure in the main service-pipe. The orifice of this meter is much larger than those ordinarily employed, where a considerable pressure of water often has to pass through a very small orifice. The regulation of the supply of this kind of meter is always easy to be made before putting the apparatus in position, thus avoiding the long and tedious operation of ascertaining the difference of pressure caused by the varying supply to the neighbourhood, and with this meter it will not be found necessary to take the mean of the year's supply, which is at all times almost an impossibily to do accurately.

The improved gauge or meter acting under pressure consists, according to one modification, of a vertical metal pipe, the upper part of which is concave, and has attached to it a concave cover, between which two parts is secured a diaphragm of india-rubber, leather, or other suitable elastic material, in the centre of which two convex weights are attached by a central screw passing through them, which said screw is continued downwards into a tube through which the supply-water passes. On the water entering the base of the concave reservoir it presses the diaphragm upwards, thereby reducing the supply of water by means of the difference in the diameter of the continuation of the screw where it passes through the entrance to the meter until the pressure is in equilibrium, when the water passes through an aperture in the said diaphragm to the supply-pipes, consequently the difference of the pressure between the top and bottom of the disc or diaphragm will be always the same, thus ensuring constant supply. Instead of the diaphragm being fixed, it can be attached to a circular regulator working in the entrance-passage, whereby the same result will be obtained. This construction of meter may be applied to the overshoots of canals, for feeding mill-ponds, fountains, urinals, and other similar purposes.

85.—ROBERT DOYNE DWYER, of 85, Gracechurch Street, in the City of London, civil engineer, for "*An improved self-closing tap for drawing off liquids.*" Provisional protection only obtained. Dated Jan. 11, 1870.

This invention relates to the construction of taps for drawing off liquids in the following manner:—The shell is formed in the ordinary way as regards the lower part of it, but the upper part surrounding the plug is formed with a large circular cup, in which is placed a convolute tempered steel spring, one end of which takes against a projection in the cup, and the other end against a projection on the plug, so that by placing a loose key on a square formed on the outer end of the plug, and pulling it, the plug may be turned partly round in its seat, until the cross-hole thereon comes opposite the passage in the shell to allow the liquid in the vessel, main, or service-pipe to flow therefrom, during the whole of which time the pressure must be kept on the handle of the tap.

APPLICATIONS FOR LETTERS PATENT.

3162.—JOHN JOSEPH PARKES, of 17, London Street, Paddington, in the co. of Middlesex, gas engineer, for "*Improvements in gas-stoves or apparatus for cooking and heating purposes.*" Dec. 2, 1870.

3167.—FRITZ HILLE, of Flora Villa, Brentford, in the co. of Middlesex, for "*Improvements in the manufacture of deodorizing and disinfecting compounds, and in the treatment of sewage and impure waters, and in closets and apparatus for the treatment of sewage.*" Dec. 2, 1870.

3169.—HENRY YOUNG DARRACOTT SCOTT, of Ealing, in the co. of Middlesex, lieutenant-colonel Royal Engineers, for "*Improvements in the treatment of sewage, and the preparation of materials to be used for its purification.*" Dec. 2, 1870.

3179.—JOHN ROBB, of 19, Clark Street, Stepney, in the co. of Middlesex, for "*Improvements in four-way valve apparatus.*" Dec. 3, 1870.

3228.—WILLIAM LLOYD WISE, of Chandos Chambers, Adelphi, in the city of Westminster, patent agent, for "*Improvements in the mode of and apparatus for igniting gas.*" A communication. Dec. 8, 1870.

3229.—JOHN WRIGHT, of St. Martin's, Stamford, in the co. of Northampton, for "*An improvement in water and other closet seats.*" Dec. 8, 1870.

3269.—FREDERICK LUDEWIG HAHN DANCHELL, of Horwich, in the co. of Lancaster, engineer, for "*Improvements in apparatus for treating sewage matter, and for filtering sewage and other water.*" Dec. 14, 1870.

3304.—SYDNEY SMITH, of Hyson Green Brass-Works, near Nottingham, brass-founder, for "*Improvements in cocks and valves.*" Dec. 17, 1870.

3315.—ROBERT RUSSELL, of Liverpool, in the co. of Lancaster, for "*Improvements in filters and the fittings connected therewith.*" Dec. 19, 1870.

3323.—JOHN REID, of Leith, in the co. of Mid Lothian, N.B., engineer and manager of the Edinburgh and Leith Gaslight Company, for "*An improved liquid-meter.*" Dec. 20, 1870.

3325.—ALBERT MARCUS SILBER, of Wood Street, Cheapside, in the City of London, merchant, for "*Improvements in apparatus for lighting and heating purposes.*" Dec. 20, 1870.

3333.—WILLIAM FIRTH, of Leeds, in the co. of York, for "*Improvements in dressing cannel coal and other minerals.*" Dec. 21, 1870.

3347.—HENRY BONNETT, of Swansea, in the co. of Glamorgan, plumber, for "*Improvements in water-closets.*" Dec. 21, 1870.

3351.—CHARLES ALEXANDER CALVERT, of Manchester, in the co. of Lancaster, for "*Improvements in apparatus for drawing off and measuring liquids.*" Dec. 22, 1870.

3387.—JOHN WOLSTENHOLME, of Radcliffe Bridge, in the co. of Lancaster, engineer, and EDWARD HOLT, of the same place, machinist, for "*Improvements in steam pumping-engines.*" Dec. 29, 1870.

GRANTS OF PROVISIONAL PROTECTION.

2865.—ALEXANDER HORACE BRANDON, of 5, Quai de Paris, Rouen, France, civil engineer, for "*Improvements in the means or apparatus for producing the more complete combustion of gas, paraffin, and other hydrocarbon oils.*" A communication. Oct. 31, 1870.

2999.—JOHN HENRY SPENCER, of 23, John Street North, Marylebone Road, Middlesex, and of 9, Tranquil Terrace, Chancellor's Road, Fulham Road, Hammersmith, Middlesex, builder, for "*An improved apparatus for a deodorizer for water-closets.*" Nov. 16, 1870.

3061.—WILLIAM ROBERT LAKE, of Southampton Buildings, London, consulting engineer, for "*Improvements in hydrocarbon lighting apparatus, chiefly designed for locomotives and signals.*" A communication. Nov. 23, 1870.

3079.—WILLIAM NUNN, of Oak Lodge, Bushey Hill, Peckham Road, in the co. of Surrey, for "*Improvements in traps to drains and other places.*" Nov. 24, 1870.

3107.—AMOS BRYANT, of Heavitree Road, Exeter, and SAMUEL HALL CULLEY, of St. Sidwell's Cottage, in the city of Exeter, both in the co. of Devon, for "*Improvements in deodorizing and treating sewage, and in apparatus to be employed for this purpose.*" Nov. 26, 1870.

3159.—HENRY DOULTON, of High Street, Lambeth, in the co. of Surrey, for "*Improvements in the construction of irrigation conduits or channels for the conveyance and distribution of sewage and other waters.*" Dec. 1, 1870.

3162.—JOHN JOSEPH PARKES, of 17, London Street, Paddington, in the co. of Middlesex, gas engineer, for "*Improvements in gas-stoves or apparatus for cooking and heating purposes.*" Dec. 2, 1870.

3167.—FRITZ HILLE, of Flora Villa, Brentford, in the co. of Middlesex, for "*Improvements in the manufacture of deodorizing and disinfecting compounds, and in the treatment of sewage and impure waters, and in closets and apparatus for the treatment of sewage.*" Dec. 2, 1870.

3169.—HENRY YOUNG DARRACOTT SCOTT, of Ealing, in the co. of Middlesex, lieutenant-colonel Royal Engineers, for "*Improvements in the treatment of sewage, and in the preparation of materials to be used for its purification.*" Dec. 2, 1870.

3225.—JOHN CLAYTON MEWBURN, of 172, Fleet Street, in the City of London, patent agent and consulting engineer, for "*Improvements in apparatus for injecting and ejecting fluids.*" A communication. Dec. 8, 1870.

3228.—WILLIAM LLOYD WISE, of Chandos Chambers, Adelphi, in the city of Westminster, patent agent, for "*Improvements in the mode of and apparatus for igniting gas.*" A communication. Dec. 8, 1870.

3229.—JOHN WRIGHT, of St. Martin's, Stamford, in the co. of Northampton, for "*An improvement in water and other closet seats.*" Dec. 8, 1870.

3269.—FREDERICK LUDEWIG HAHN DANCHELL, of Horwich, in the co. of Lancaster, engineer, for "*Improvements in apparatus for treating sewage matter, and for filtering sewage and other water.*" Dec. 14, 1870.

3304.—SYDNEY SMITH, of Hyson Green Brass-Works, near Nottingham, brass-founder, for "*Improvements in cocks and valves.*" Dec. 17, 1870.

3318.—ALBERT MARCUS SILBER, of Wood Street, Cheapside, in the City of London, merchant, and FREDERICK WHITE, of Camberwell, in the co. of Surrey, watchmaker, for "*Improvements in lamps, especially applicable to railway and street lamps.*" Dec. 19, 1870.

NOTICES TO PROCEED.

2120.—ROBERT BOYLE, of Glasgow, in the co. of Lanark, N.B., artist, for "*Improvements in ventilators.*" July 28, 1870.

2194.—SEGISMUND LEONI, of 34, St. Paul Street, New North Road, in the co. of Middlesex, manufacturer, for "*Improvements in apparatus for disinfecting, purifying, and drying, and also for cooking by heated air.*" Aug. 6, 1870.

2228.—EDMUND WILLIAM PYLE TAUNTON, of Birmingham, in the co. of Warwick, manufacturer, for "*Improvements in pumps for raising and forcing liquids.*" A communication. Aug. 11, 1870.

2248.—ALEXANDER PRINCE, of 4, Trafalgar Square, Charing Cross, in the co. of Middlesex, for "*Improvements in generating gas from petroleum and other oleaginous substances, and in the apparatus to be employed therein.*" A communication. Aug. 12, 1870.

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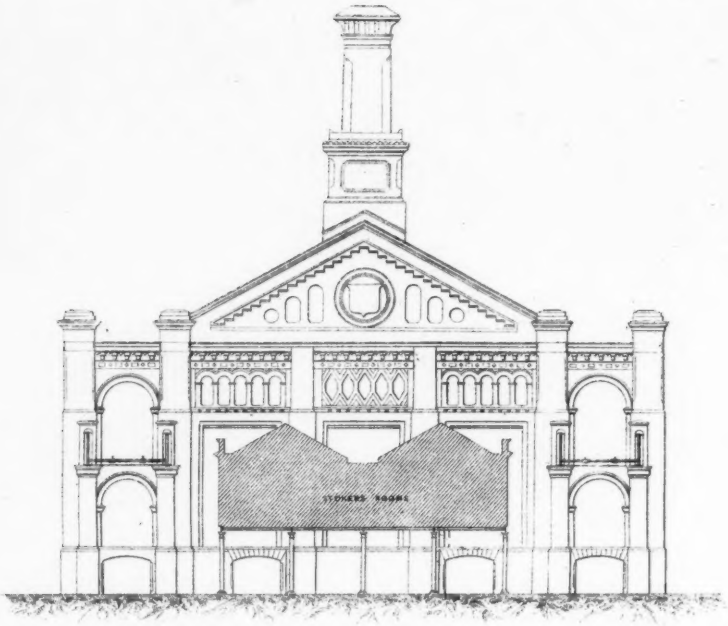

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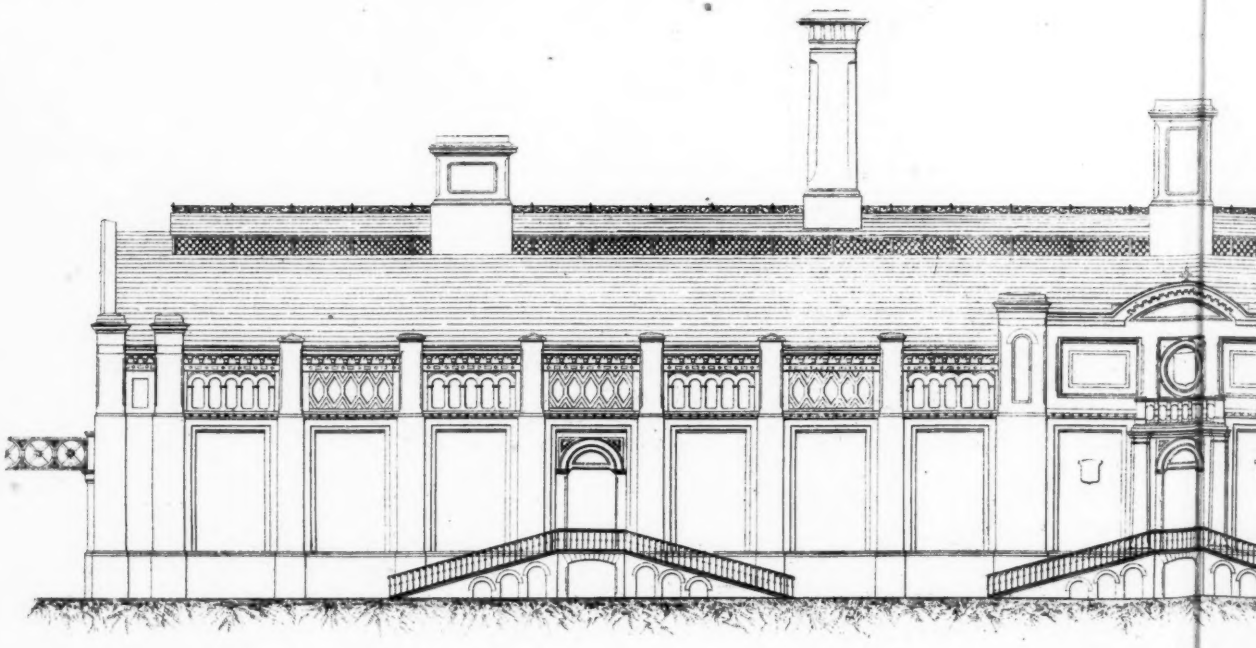

SIDE ELEVATION

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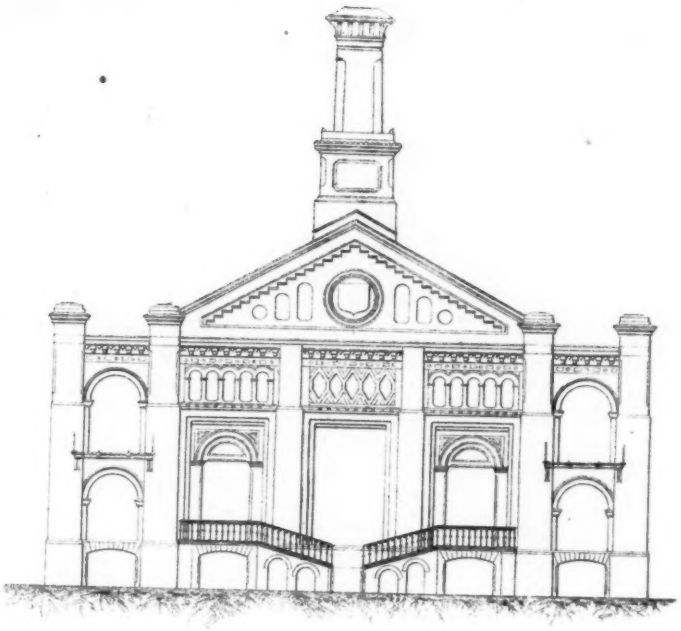

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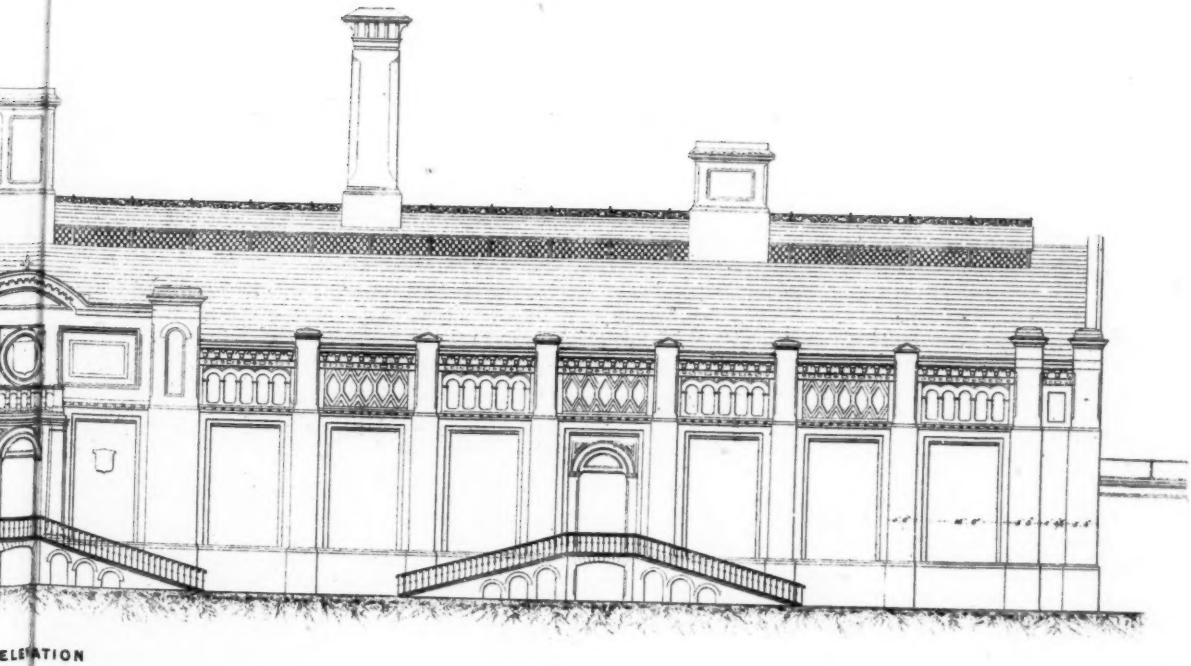

ELEVATION

by Foreman & Bass, London.

2278.—WILLIAM HARVEY, of Brewer Street, in the co. of Middlesex, gas and hot water engineer, for "*Improvements in the construction of water-cocks and gas-cocks.*" Aug. 17, 1870.

2319.—FREDERICK HOLMES, of Gritton Terrace, Victoria Park, in the co. of Middlesex, for "*Improvements in pumps.*" Aug. 23, 1870.

2361.—EDMUND CHIVERTON, of Orient Cottage, Middle Street, Southsea, in the co. of Hants, for "*Improved means of and apparatus for lighting gas-lamps.*" Aug. 29, 1870.

2730.—JOHN STALVIES, of Bromsgrove, in the co. of Worcester, locomotive superintendent, for "*Improvements in gas-stoves for heating and warming rooms, and for other like purposes.*" Oct. 17, 1870.

2915.—JOHN SOMERVILLE, of Dublin, gas engineer, for "*Improvements in pipes, and in the means of connecting them together.*" Nov. 4, 1870.

2974.—AUGUSTUS GEORGE VERNON HARCOURT, of Christchurch, in the city of Oxford, for "*Improvements in the purification of gas.*" Nov. 12, 1870.

3061.—WILLIAM ROBERT LAKE, of Southampton Buildings, London, consulting engineer, for "*Improvements in hydrocarbon lighting apparatus, chiefly designed for locomotives and signals.*" A communication. Nov. 23, 1870.

3062.—WILLIAM ROBERT LAKE, of Southampton Buildings, London, consulting engineer, for "*Improvements in gas-regulating apparatus.*" A communication. Nov. 23, 1870.

3086.—JOHN HENRY JOHNSON, of 47, Lincoln's Inn Fields, in the co. of Middlesex, gentleman, for "*Improvements in earth-closets.*" A communication. Nov. 24, 1870.

3112.—JOHN HENRY JOHNSON, of 47, Lincoln's Inn Fields, in the co. of Middlesex, gentleman, for "*Improvements in the manufacture of corrugated and embossed glass, and in the application of the same to the purposes of illumination.*" A communication. Nov. 28, 1870.

3159.—HENRY DOULTON, of High Street, Lambeth, in the co. of Surrey, for "*Improvements in the construction of irrigation conduits or channels for the conveyance and distribution of sewage and other waters.*" Dec. 1, 1870.

APPLICATION FOR PROLONGATION OF PATENT.

THOMAS SPENCER, of 32, Euston Square, in the co. of Middlesex, analytical chemist, for "*Certain improvements in the purification of water and other fluid and gaseous bodies.*" June 19, 1857.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

3219.—ALFRED VINCENT NEWTON, "*Improvements in rotary engines, applicable as motors, pumps, meters, and for other purposes; also in indicators applicable to such and other engines or meters, and other purposes.*" Nov. 13, 1867.

3225.—RICHARD HARRISON, "*Improvements in cocks or taps.*" Nov. 14, 1867.

3228.—LEVI ALFRED WAINMAN, "*Improved apparatus for raising water.*" Nov. 14, 1867.

3245.—RICHARD HOWSON, "*An improved gas-furnace.*" Nov. 15, 1867.

3305.—HENRY JAMES and EDWARD DREWETT, "*Improvements in water-closets.*" Nov. 21, 1867.

3318—PETER SALMON, "*Improvements in the manufacture of gas, and in the treatment and application of such and other gas for cooking, warming, lighting, generating of steam, and other purposes, combined with their use as a motive power previous to being burned or consumed, and improvements in the apparatus for these purposes.*" Nov. 23, 1867.

3361.—JAMES SUTCLIFFE SMITH, "*Certain improvements in apparatus for ventilating buildings and other similar purposes.*" Nov. 27, 1867.

3397.—JOHN JOSEPH PARKES, "*Improvements in the means of ventilating rooms and buildings, and in apparatus for the same.*" Nov. 29, 1867.

3415.—EDWARD PRICE, "*Improvements in apparatus for regulating the supply of gas to burners.*" Dec. 2, 1867.

3430.—JOHN HAYS WILSON, "*Improvements applicable to water-closets and pumps connected therewith, which latter improvements are applicable to lift-pumps generally.*" Dec. 3, 1867.

3451.—EDWARD THOMAS HUGHES, "*An improved lighting, heating, and cooking apparatus, part of which is applicable to other purposes.*" Dec. 4, 1867.

3491.—CHARLES MATTHEW BARKER, "*Improvements in socket and flange spigot pipes.*" Dec. 7, 1867.

3554.—HENRY ATKINSON, "*Improvements in gas-retort ovens and furnaces.*" Dec. 14, 1867.

3587.—ERNEST MARIE DU BOYS, "*Improvements in liquid-meters or apparatus for measuring and registering the volume of water or other liquid flowing under pressure through pipes or ducts.*" Dec. 17, 1867.

3590.—WILLIAM ARMAND GILBEE, "*Improvements in the method of and apparatus for raising water.*" Dec. 17, 1867.

3624.—LEVI LINCOLN TOWER, "*Improvements in faucets and apparatus for measuring liquids.*" Dec. 20, 1867.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £100 BEFORE THE EXPIRATION OF THE SEVENTH YEAR.

3015.—WILLIAM CLARK, "*Improvements in apparatus for lighting and heating.*" Dec. 1, 1863.

3263.—HENRY PHILIP FORREST, "*Improvements in apparatus for drawing off and measuring fluids.*" Dec. 24, 1863.

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REPORT OF PROCEEDINGS IN PARLIAMENT

(SESSION 1870)

ON THE

BLACKBURN CORPORATION IMPROVEMENT BILL.

LONDON:

WM. B. KING, 11, BOLT COURT, FLEET STREET, E.C.

Share List of Metropolitan Gas Companies.

Number of Shares issued.	Amount per share.	Name of Company.	Amount paid up p. Share.	Dividend p. Cent. p. Annum.	Latest Quotations.
	£		£ s. d.	£ s. d.	£
8000	10	Anglo-Romano	10 0 0	10 0 0	11 — 12
5000	20	Bahia (Limited)	20 0 0	3 0 0	13 — 14
1000	20	Do., preference	20 0 0	10 0 0	25 — 26
750	20	Do., do., redeemable	20 0 0	10 0 0	20 — 22
40000	5	Bombay (Limited)	5 0 0	4 10 0	6¼ — 6⅜
10000	5	Do., third issue	4 0 0	4 10 0	5¼ — 5⅜
10000	20	British (Limited) (Norwich, Hull-Sculcoates, Hanley, Tunstall & Shelton [Potteries], Trowbdge., & Holywll.)	20 0 0	10 0 0	30 — 31
7500	20	Cagliari (Limited)	20 0 0	7 0 0	
112000	10	*Chartered*	10 0 0	9 0 0	15 — 15½
8000	10	Do., A shares	5 0 0	9 0 0	6¼ — 6⅜
10000	10	Do., B shares, 4 per cent. max.	10 0 0	4 0 0	6¾ — 7¼
25000	10	Do., 5 per cent. preference	10 0 0	5 0 0	12 — 12½
20000	10	Do., 10 per cent. preference	10 0 0	10 0 0	19 — 19¾
17490	25	*Commercial*	25 0 0	10 0 0	42 — 44
20000	20	Continental Union	20 0 0	8 0 0	23 — 24
10000	20	Do., new	5 0 0	8 0 0	6¼ — 6⅞
5213	20	Do., preference (France: Strasbg., Cette, Nismes, Montargis, Vienne, Roanne, Beaucaire, Rueil, Albi. Italy: Milan, Genoa, Parma, Modena, Alessandria, Messina.)	20 0 0	7 0 0	24 — 26
5000	10	*Crystal Palace District*	10 0 0	10 0 0	.. — 17
5000	10	Do., preference	10 0 0	6 0 0	.. — 12
6044	10	Do., new shares	10 0 0	7 0 0	.. — 12
3956	10	Do.	1 0 0	7 0 0	.. — 14
4000	50	*Equitable*	50 0 0	10 0 0	87 — 89
4000	25	Do., new shares	25 0 0	10 0 0	43 — 45
23406	10	European (Limited)	10 0 0	11 0 0	14 — 15
12000	10	Do., new shares (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 8 0	11 0 0	7¼ — 7⅞
5000	10	Hong Kong (Limited)	10 0 0	9 0 0	11 — 12
26000	50	*Imperial*	50 0 0	10 0 0	83 — 85
26000	10	Do., new shares	7 0 0	10 0 0	13 — 13¾
26000	12½	Do., new shares	12 10 0	7 0 0	15 — 16
25000	12½	Do., new shares, 1870	2 10 0	7 0 0	3¾ — 4¼
1300	100	Do., bonds	£100	10 0 0	175 —180
56000	50	*Imperial Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwerp, Bordeaux, Brussels, Cologne, Frankfort-on-Maine, Haarlem, Stolberg, Toulouse, & Vienna.)	43 15 0	9 2 6	61 — 63
400	100	Imperial Mexican (Limited)	100 0 0	nil.	
200	100	Do., new	100 0 0	nil.	
3000	40	*Independent*	40 0 0	10 0 0	67 — 69
3000	10	Do.	10 0 0	5 0 0	7¾ — 8¼
3000	20	Do.	15 0 0	7 10 0	18 — 19
7133	50	*London*	50 0 0	10 0 0	83 — 85
5610	25	Do., 1st preference	25 0 0	6 0 0	27 — 29
503	50	Do., 2nd preference	50 0 0	6 0 0	
214	50	Do., 3rd preference	50 0 0	6 0 0	
£18781		Do., 1st preference stock		6 0 0	
£11828		Do., 2nd preference stock		5 0 0	
		Nictheroy, Brazil (Limited)			
15000	5	Malta and Mediterranean (Limited)	5 0 0	4 10 0	3¾ — 4
6000	5	Do., preference	5 0 0	7 0 0	4¾ — 5¼
20000	5	Mauritius (Limited)	2 0 0		2 — 2¼
30000	5	Oriental (Calcutta)	5 0 0	10 0 0	7¾ — 8¼
30000	5	Do., new shares	2 0 0	10 0 0	3 — 3¼
10000	5	Ottoman (Limited)	5 0 0	nil.	2 — 2¼
14000	10	Pará (Limited)	10 0 0	10 0 0	10 — 11
27000	20	*Phœnix*	20 0 0	10 0 0	34 — 35
3600	100	Do., new	40 0 0	7 10 0	50 — 53
144000	Sk.	Do.	100 0 0	5 0 0	85 — 90
5000	20	*Ratcliff*	20 0 0	10 0 0	30 — 32
20		Rio de Janeiro (Limited)	20 0 0	10 0 0	28 — 28½
6959	5	Singapore (Limited)	5 0 0	7 0 0	
2000	5	Do., preference	5 0 0	7 10 0	
1500	32½	Shanghai	32 10 0	12 0 0	
4000	50	*South Metropolitan*	50 0 0	10 0 0	87 — 89
4000	12½	Do.	12 10 0	10 0 0	21 — 22
20000	12½	Do., new shares	2 10 0	10 0 0	4¾ — 5¼
15000	10	*Surrey Consumers.*	10 0 0	10 0 0	15¼ — 16¼
10000	10	Do., new	6 0 0	10 0 0	.. — 10
9000	4	United General (Limerick)	4 0 0	5 0 0	2¼ — 2⅜
1500	10	*Wandsworth and Putney*	10 0 0	10 0 0	10 — 12
1500	10	Do.	10 0 0	7 10 0	
1819	10	Do.	10 0 0	7 10 0	
1138	10	Do.	5 0 0	7 10 0	
20000	10	Western (Limited) A shares	10 0 0	10 0 0	17 — 18
10000	10	Do., B shares	8 0 0	10 0 0	14¼ — 15
10000	10	Do., C shares	8 0 0	10 0 0	13 — 13¼
20000	10	Do., D shares	1 0 0	10 0 0	2¾ — 3
16000	5	*West Ham*	5 0 0	8 0 0	7 — 7¼
10000	5	Do., new shares	1 0 0	8 0 0	
551	10	West London Junction (Limited)	10 0 0	6 0 0	
520	10	Do., preference	10 0 0	6 0 0	

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Share List of Provincial Gas Companies.

(Directors and Managers of Gas-Works are earnestly requested to enable us to rectify any errors and fill up the omissions in the following List.)

The Companies whose names are printed in italic type are incorporated by Act of Parliament.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Dividend per Ct. per Annum.	Last Quotation.
	£	**ENGLAND.**	£ s d	£ s d	£ s d
1200	5	Aberdare	5 0 0	10 0 0	6 10 0
		Aberdare & Aberaman			
		Aberdovey			
400	5	Abergele (Lim.)	5 0 0	4 0 0	5 0 0
		Abertillery G. & W.			
250	2½	Abersychan (Lim.)	2 10 0		
		Aberystwith			
800	12½	Abingdon	12 10 0	8 0 0	15 0 0
1050	10	*Accrington G. & W.*	10 0 0	& Bns.	15 0 0
1050	10	Do., new shares	10 0 0		15 0 0
2100	5	Do., do.	5 0 0		7 10 0
2100	5	Do., do.	1 0 0		1 10 0
2100	2¼	Do., do.	0 10 0		0 15 0
1200	5	*Airdale* (Limited)	5 0 0	10 0 0	9¼—10
300	5	Do., new shares	2 10 0	8 0 0	4¾—5
24	75	Alcester	75 0 0	4 0 0	80 0 0
128	10	Aldborough (Lim.)	10 0 0	5 0 0	
269	10	Alderney	10 0 0	5 0 0	11 0 0
2500	10	*Aldershot G. & W.*	6 10 0	5 10 0	
	2	Aldridge (Limited)			
		Aldrington, B., & H.			
300	6	Alfreton	6 0 0	5 0 0	5 10 0
		Alnwick			
		Alston Moor			
250	10	Alton	10 0 0	10 0 0	12 0 0
1600	5	Altrincham	5 0 0	6 0 0	6 0 0
		Ambleside District, Amersham [£8000 Amlwich (Limited)			
170	10	Ampthill	10 0 0	4 0 0	9 0 0
350	10	Andover	10 0 0	6 0 0	12 10 0
358	5	Appleby	5 0 0	2 10 0	2 15 0
	5	Arlesey (Limited)			
260	10½	Arundel	10 10 0	7 10 0	
250	10	Ashbourne, Derby	10 0 0	6 0 0	13 10 0
292	5	Ashburton	5 0 0	5 0 0	
84	30	Ashby-de-la-Zouch	30 0 0	6 0 0	
700	10	Ashford (L.), Kent	10 0 0	6 0 0	11 10 0
1600	30	*Ashton-und-Lyne*	30 0 0	10 0 0	60 0 0
		Aspatria			
590	5	Atherstone	5 0 0	9 0 0	8 10 0
		Attleborough			
		Axminster			
900	12	Aylesbury	10 0 0	7 10 0	12 0 0
150	10	Aylsham (L.), Norfk.	10 0 0	5 0 0 & Bns.	12 10 0
3093	10	*Bacup* (*Rossendale Union*) ordinary	10 0 0	10 0 0	16 0 0
600	10	Do., preference	10 0 0	10 0 0	16 0 0
2597	10	Do., new issue	6 0 0	10 0 0	11 0 0
1503	10	Do., 2nd new issue	8 0 0	7 0 0	10 0 0
300	5	Bakewell	5 0 0	8 0 0	8 0 0
200	10	Baldock	10 0 0	7 10 0	
1000	10	*Banbury* (Limited)	10 0 0	8 10 0	15 15 0
500	10	Do., new shares	7 10 0	7 0 0	10 10 0
2650	10	*Bangor Gas & Water.*	10 0 0	8 0 0	14 0 0
		Barking.			
		Barmouth (L) £1500			
260	10	Barnard Castle	10 0 0	5 10 0	10 15 0
800	5	Barnet	5 0 0	6 0 0	5 10 0
		Barnsley		7 10 0	
109	20	Barnstaple	20 0 0	7 10 0	
109	20	Barnstaple (Lim.)	20 0 0	& Bns.	
		Barrow-in-Furness Gas & Water			
1158	2	Barton-on-Humber	2 0 0	5 0 0	2 0 0
120	25	Basingstoke	25 0 0	8 0 0	35 0 0
120	10	Do.	10 0 0	8 0 0	14 0 0
		Baslow (Derby)			
2500	16	*Bath*, A shares	16 0 0	8 0 0	38 10 0
2500	8	Do., B shares	8 0 0		united
2500	10	Do., C shares	10 0 0	7 0 0	15 0 0
5000	10	Do., D shares	4 0 0	7 0 0	6 2 0
		Battle £2000		6 0 0	
56	26⅔	Bawtry	26 12 6	6 0 0	25 0 0
300	5	Beaconsfield (L.)	5 0 0	4 10 0	05 0 0
	3	Beaminster (Limited)			
710	10	*Beccles Gas & Water.*	10 0 0	2 10 0	
		Bedale, Yorkshire			
300	30	*Bedford*	25 0 0	4 0 0	20 0 0
390	10	Bedworth	10 0 0	5 0 0	10 0 0
300	3	Belford	3 0 0		1 10 0
400	10	Belper	10 0 0	10 0 0	18½—19
	10	Bentham (Limited)			
		Berkhampstead			
1086	10	Berwick & Tweedmouth	10 0 0	10 0 0	18 0 0
120	20	Bewdley	16 0 0	5 0 0	16 0 0
200	10	Bicester	10 0 0	5 10 0	11 0 0
		Biddulph, Bradley G., & Black Bull			
330	10	Bideford	10 0 0	6 0 0	10 10 0
		Biggleswade			
		Billericay			
200	10	Billingboro' & Hor.	10 0 0	8 10 0	12 10 0
6000	5	*Bilston*	5 0 0	8 0 0	6 6 0
200	10	Bingham	10 0 0	4 0 0	
		Birchington (Lim.)			
1200	80	*Birmingham*, A sh.	80 0 0	9 0 0	137½—8½
400	8	Do., B shares	8 0 0	9 0 0	13¾—13⅞
3750	40	Do., new shares	40 0 0	7 10 0	57½—58
1270	40	Do.	30 0 0	7 10 0	44¼—44½
2400	50	*Birmingham & Staffordshire*	50 0 0	10 0 0	100½—1½
2400	25	Do., new shares	25 0 0	10 0 0	50¼—50¾
7020	20	Do., do.	20 0 0	10 0 0	40¼—40¾
12500	28	Do., do.	16 0 0	7 10 0	26¼—26¾
250	16	*Birstall*	12 0 0	12s. 6d. per sh.	12 0 0
		Bishop's Auckland			
180	10	Bishop's Castle	10 0 0	5 0 0	10 0 0
230	10	Bishop's Stortford	10 0 0	5 0 0	10 0 0
		Bishop's Waltham (L)			
6000	15	*Blackburn*, A shares	15 0 0	9 0 0	27 0 0
6000	15	Do., B shares	2 0 0	6 15 0	3 10 0
	5	Blaenavon (L) £4000			
		Blaenavon Gas & W.			
		Blandford			
		Blanean Festiniog (L.)			
		Blyth & Cowpen			
		Bodmin			
		Bodmin Consumers			
		Bognor			
100	10	Bolsover	10 0 0		10 0 0
3909	16⅔	*Bolton*	16 10 0	10 0 0	35 10 0
7466	16⅔	Do., new shares	15 10 0	6 10 0	21 5 0
		Boroughbridge (L)			
2000	10	*Boston*	10 0 0	8 10 0	17 10 0
	5	Boston Spa (Lim.)	5 0 0	6 10 0	5 10 0
		Botesdale (L.), Suff.			
	5	Bottesford (L) £1500			
200	5	Boughton Blean	5 0 0	5 0 0	5 0 0
193	10	Bourn	10 0 0	5 0 0	
		Bournemouth G. & W.			
160	10	Brackley	10 0 0	6 0 0	10 0 0
		Bracknell (Lim.)			
		Bradford, Wilts			
	25	*Bradford, Yorkshire*	25 0 0	10 0 0	53—54
		Braintree			
	67	Bramham Consumers (Limited)			
		Brampton, Cumber.			
		Brandon, Suffolk			
600	10	*Brecon* (Limited)	10 0 0	10 0 0	20 0 0
129700	Sk.	*Brentford*	All.	7 10 0	
5000	20	Do., A shares	1 0 0		
2500	20	Do., preference	20 0 0	5 0 0	
		Brentwood			
		Bridge, near Canter.			
		Bridge-end G. & W.			
		Bridgenorth (L.)			
200	60	*Bridgwater*	60 0 0	7 10 0	90 0 0
866	10	Bridlington (L.)	10 0 0	10 0 0	18 5 0
520	10	Do.	2 10 0	10 0 0	7 10 0
450	10	Bridport	10 0 0	7 10 0	12 0 0
450	10	Do., new shares	7 0 0	5 0 0	8 8 0
6000	5	*Brierly Hill*	5 0 0	4 0 0	10½—11
		Brigg			
		Brightlingsea (L.)			
3375	20	*Brighton*	20 0 0	7 0 0	17—18
675	20	Do., new shares	4 0 0	7 0 0	
5000	20	*Brighton & Hove*	20 0 0	7 0 0	24 0 0
1250	20	Do., new shares	20 0 0	7 0 0	22 0 0
2500	20	Do.	2 0 0	6 0 0	
		Brimscombe (L.)			
231250	Sk.	*Bristol United*	Stock.	10 0 0	189 19 0
300	5	*Briton-ferry*	5 0 0		
150	8	Brixham	8 0 0	5 0 0	
		Broadstairs			
2000	10	*Bromley*, Kent	10 0 0	8 10 0	14 5 0
3000	10	Do., new shares	4 0 0	8 10 0	5 10 0
6000	1	Bromsgrove	1 0 0		1—1 1/5
100	10	Bromyard (Lim.)	10 0 0		
		Broughton			
120	10	Bruton	10 0 0	4 0 0	8—9
		Brymbo			
		Brynmawr			
100	25	Buckingham	25 0 0	6 0 0	26 0 0
		Buntingford (Lim.)			
	5	Burgess Hill & St. John's (L.) £5000			
500	1	Burley-in-Wharfdle. (Limited)	1 0 0	5 0 0	1 1 0
		Burnham, Bucks			
		Burnham (L.) Essex			
		Burnham, Somers.			
1600	5	*Burslem & Tuns*	5 0 0	10 0 0	9 5 0
3000	5	Do., new shares	5 0 0	7 10 0	7 2 6
1600	5	Do., do.	5 0 0	7 0 0	6 10 0
440	2½	Burton, Westmoreland (Limited)	2 10 0		
1200	10	*Bury St. Edmund's*	10 0 0	10 0 0	19 10 0
1800	10	Do., new shares	4 0 0	7 10 0	6 10 0
500	5	Caerleon (Lim.)	4 0 0		
	5	Caerphilly Gas & Water (Limited)			
150	10	Caistor	10 0 0	7 0 0	12 0 0
187	5	Callington	5 0 0		5 0 0
215	10	Calne, Wilts	10 0 0	6 0 0	10 0 0
		Calverley (L.) *York.*			
		Camborne			
600	50	*Cambridge*	50 0 0	10 0 0	93—95
160	12½	Do., new shares	12 10 0	10 0 0	22 10 0
640	8⅓	Do., do.	4 0 0	10 0 0	6 0 0
	5	Cambridge Consumers (Limited)	1 10 0		
300	50	Cansfield	50 0 0	10 0 0	92 0 0
240	50	*Canterbury G. & W.*	50 0 0		
240	25	Do., new shares	25 0 0		
240	12½	Do., do.	12 10 0	£6	
240	6¼	Do., do.	6 5 0		
800	25	*Cardiff*, A shares	25 0 0	10 0 0	48 0 0
1200	25	Do., B shares	25 0 0	8 0 0	36 0 0
400	25	Do.	17 10 0	8 0 0	25 0 0
		Cardigan (Limited)			
160	25	Carmarthen	25 0 0	5 0 0	30 0 0
	10	*Carmarthen* (Lim.)			
	5	Carnarvon			
		Carnforth (Limited)			
		Carshalton [£10000			
200	6	Castlecary	6 0 0		5 0 0
200	10	Castle Donnington	10 0 0	6 0 0	12 14 0
249	5	Castleford	5 0 0	5 0 0	5 0 0
400	5	Castletown, I. of M.	5 0 0	6 0 0	5 14 0
409	5	Do.	5 0 0	5 10 0	5 10 0
	5	Caterham (Lim.)			
620	2	Cawood (Limited)	2 0 0	4 0 0	
329	5	Chard (Limited)	0 10 0		
	¼	Charing (L.) £1000			
720	5	Chatteris	5 0 0	7 10 0	5 15 0
300	10	Cheadle	10 0 0	6 0 0	12 10 0
200	50	Chelmsford	50 0 0	8 0 0	70 0 0
200	25	Do., new shares	25 0 0	8 0 0	35 0 0
2500	16	*Cheltenham*, A sh.	16 0 0	8 0 0	
2500	8	Do., B shares	8 0 0	7 0 0	
		Do., new shares		7 0 0	
500	10	*Chepstow*, A shares			
200	10	Do., B shares			
600	5	*Chertsey Consumrs*	5 0 0	6 0 0	6 10 0
600	1½	Do.	1 10 0	6 0 0	
600	2½	Do.	2 10 0	6 0 0	
250	10	Do.	10 0 0	6 0 0	
230	10	Chesham	10 0 0	5 0 0	10 10 0
30000	Sk.	*Chester United*	Stock.	10 0 0	172—174
30000	,,	Do., preference	,,	17 0 0	129—131
535	10	Do., new shares	10 0 0	7 0 0	14 0 0
250	5	Chester-le-Street	5 0 0	6 0 0	5 0 0
11200	Sk.	*Chesterfield G & W.*	100 0 0	10 0 0	108—110
8000	Sk.	Do., guar. stock	100 0 0	5 0 0	105—108
400	50	Do., preference	50 0 0	8 0 0	50—54
2120	10	Do., do.	10 0 0	5 0 0	10 10 0
580	10	Do., ordinary	10 0 0	7 0 0	10 0 0
		Chesterton (L.)			
		Chichester			
		Chigwll. & Woodford Br. (L.) £10,000			
	5	Chilham Con. (L.)			
		Chippenham			
329	10	Chipping Nort. (L.)	10 0 0	5 0 0	
100	10	Chipping Ongar	10 0 0	2 10 0	5 0 0
	5	Chipping Sodbury (L.)			
838	20	Chorley	20 0 0	7 0 0	27 0 0
		Chowbent, Lanc.			
		Christchurch			
	5	Chudleigh (Lim.)			
200	5	Church Stretton (L.)	5 0 0		5 0 0
680	10	Cirencester	10 0 0	5 0 0 & Bns.	11 0 0
		Clay Cross			
	10	*Clayton, Allerton, & Thornton*	10 0 0		12½—13
		Cleethorpes			
550	10	*Clevedon* (L.)	10 0 0	7 0 0	11 10 0
		Clitheroe			
327	1	Cobham (Limited)	1 0 0		
1139	5	Cockermouth	5 0 0	6 0 0	6 10 0
300	5	Coggeshall	5 0 0		4¼—5
900	20	*Colchester*	20 0 0	7 0 0	22¾—23
		Coleford, Gloucester			
		Coleshill (L.) £2000			
160	10	Collingham (Lim.)	10 0 0	5 0 0	10 0 0
		Collumpton			
328	5	Colnbrook, Middlsex	5 0 0	5 0 0	5 0 0
150	20	Colne, Lancashire	20 0 0		36 0 0
150	10	Do., ¼ shares	10 0 0		18 0 0
150	5	Do., ¼ shares	5 0 0	£10	9 0 0
150	5	Do., A shares	5 0 0		9 0 0
150	5	Do., B shares	5 0 0		9 0 0
150	5	Do., C shares	2 0 0		5 0 0
1500	10	Colney Hatch	10 0 0	5 0 0	10 10 0
500	10	Do.	2 0 0	5 0 0	
	5	Colyton (Limited)	2 10 0		
320	5	Conway (Limited)	5 0 0		5 0 0
		Corsham			
		Corwen			
1200	10	Cottenham			
1600	25	*Coventry*	25 0 0	6 0 0	31½—32¼
800	25	Do., A shares	25 0 0	6 0 0	29½—30½
800	25	Do., B shares	12 10 0	6 0 0	14 12 6
400	5	Cowbridge	5 0 0	6 0 0	6 0 0
500	10	Cowes	10 0 0	5 0 0	
		Cradley Heath			
190	10	Cranbrooke, £1900	10 0 0	7 10 0	
		Crawley		4 10 0	
		Crayford & Bexley			
		Crays			
420		Crediton	5 0 0	5 0 0	6 0 0
300	10	Crewkerne	10 0 0	6 0 0	10 0 0
		Crickhowell G. & W.			
		Cricklade (L.) £1000			
200	10	Croft & Hurworth	9 0 0		
1200	1	Crook (Limited)	1 0 0	10 0 0	1 5 0
		Croston (Limited)			
251	5	Crowland	5 0 0	7 0 0	
181	10	Crowle, Lincoln	10 0 0	10 0 0	
8000	5	*Croydon Commercial*	5 0 0	7 10 0	7 0 0
		Cuckfield			
	10	Dareuth Vale (L.)			
250	20	*Dartford*	20 0 0	7 0 0	27 0 0
700	5	Dartmouth (Lim.)	5 0 0	7 10 0	7 0 0
125	20	Daventry	20 0 0	5 0 0	24 8 0
165	10	Dawley	10 0 0	5 0 0	10 0 0
346	5	Dawlish	5 0 0	8 0 0	7 10 0
1400	10	*Deal & Walmer*	10 0 0	7 10 0	12 10 0
1400	1¼	Do.	1 5 0	4 0 0	1 0 0
350	10	Do.	5 0 0	7 0 0	6 0 0
1200	1	Deddington	1 0 0		
		Dedham (L.) £1000			
		Delph, Yorkshire			
500	6	Denbigh	6 0 0	5 0 0	6 0 0
1850	25	*Derby*	25 0 0	10 0 0	54 2 6
		Dereham			
7000	5	*Devonport*	5 0 0	9 0 0	9 0 0
3000	5	Do., preference	4 0 0	5 0 0	4 0 0
7400	5	*Dewsbury & Batley* A shares	5 0 0	10 0 0	10 2 6
7400	5	Do., B shares	5 0 0	7 10 0	7 15 0
7600	5	Do., C shares	2 10 0	7 10 0	4 15 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Dividend per Ct. per Annum.	Last Quotation.
	£		£ s d	£ s d	£ s d
400	5	Dias			
400	2½	Dolgelly	5 0 0		
160	10	Do., new shares	2 10 0		
340	27½	Donnington	10 0 0	5 0 0	10 0 0
120	25	Dorchester	25 0 0	5 0 0	27 10 0
		Dorking	24 0 0	5 0 0	25 0 0
192	25	Donnington, Lincoln.			
21945	Sk.	Douglas, I. of Man	25 0 0	8 0 0	30 0 0
1855	10	*Dover*	100 0 0	6 0 0	100 0 0
500	10	Do., new shares	10 0 0	6 0 0	10 0 0
25	60	Dowlais (Limited)	10 0 0	8 0 0	12 0 0
	5	Downham Market	60 0 0	7 10 0	
		Downton (Limited) £2000			
		Driffield			
3000	5	*Drighlington & Gildersome*	5 0 0	7 10 0	7 15 0
		Droitwich			
1100	20	*Droylsden*	10 0 0	8 0 0	15 0 0
900	30	*Dudley*	30 0 0	9 0 0	40½—41½
300	30	Do., pref. shares	30 0 0	5 0 0	28½—29½
800	10	Do., new shares	5 0 0	9 0 0	6¾—7¼
1500	13½			4 0 0 0	
1500	6¾	*Dukinfield*	18 0 0	4 8 0 0	37 12 6
200	10	Dunmow	10 0 0	5 0 0	10 0 0
		Dunstable			
900	10	Durham	10 0 0	10 0 0	£26
900	10	Do., new shares	5 10 0	10 0 0	
250	10	Dursley, Glouestr	9 0 0	6 0 0	9 5 0
150	5	Easingwold	5 0 0	5 0 0	
3500	10	*East Barnet G. & W.*	10 0 0	6 0 0	
2000	10	*Eastbourne*	10 0 0	10 0 0	11 0 0
90	20	East Dereham	20 0 0	5 0 0	15 0 0
356	5	East Grinstead	5 0 0	6 0 0	21 0 0
		Easton (Limited)		5 0 0	5 0 0
1200	5	East Retford	5 0 0	10 0 0	
2410	5	*Eccleshill & Bolton*	5 0 0		7 10 0
1190	5	Do.	1 0 0		
		Eckington & Mosboro' (Limited)			
	10	Edenbridge (L.) £2000			
		Edgware			
		Egremont, Cumber.			
1399	10	*Elland*	10 0 0	10 0 0	18 0 0
699	10	Do., preference	10 0 0	2 0 0	4 0 0
300	10	Do., preference	10 0 0	5 0 0	10 0 0
800	5	Elsecar (Limited)	5 0 0	5 0 0	5 12 0
		Eltham			
200	10	Emsworth			
400	5	*Enfield*	5 0 0	5 0 0	5 0 0
		Epping (Limited)			
300	19	Epsom & Ewell	19 0 0		
		Erith			
350	15	*Eton*, A shares	15 0 0	10 0 0	16 10 0
36	15	Do., B shares	15 0 0	7 0 0	
700	10	Evesham (Limited)	10 0 0	7 0 0	11—12
1600	25	*Exeter*	25 0 0	8 0 0	40—42
250	10	*Exmouth*	10 0 0	5 0 0	10 0 0
58	25	Eye	25 0 0	5 0 0	25 0 0
170	10	Fairford £3500	10 0 0	3 0 0	
		Fakenham (Limited)			
		Falkingham			
10765	1	Falmouth (Limited)	1 0 0	2 10 0	
6955	Sk.	*Fareham*	100 0 0	6 0 0	110 0 0
256	25	nham	25 0 0	7 0 0	35 0 0
		Farnworth & Kears.			
		Farringdon			
140	50	Faversham	50 0 0	10 0 0	66 0 0
		Fazeley (L.) £3000			
120	10	Fenny Stratford (Limited)	10 0 0	5 0 0	11 0 0
	5	Filey	5 0 0	5 0 0	5 0 0
	5	Finedon (L.) £2000			
		Fleetwood			
3600	10	*Folkestone*	10 0 0	7 10 0	15 0 0
280	5	Framlingham	5 0 0	5 0 0	5 10 0
1155	1	Frodsham (Limited)	1 0 0	7 10 0	1 1 0
480	25	*Frome*	25 0 0	10 0 0	35 0 0
		Furness Gas & W.			
12000	Sk.	*Gainsborough*	All.	6 13 4	120—123
400	20	Do., new shares	9 0 0	6 13 4	10 0 0
170	10	Gillingham (Limited) Dorset	10 0 0	3 0 0	
103	25	Glastonbury	25 0 0	4 0 0	15 0 0
600	10	*Glossop*	10 0 0	9 0 0	16 0 0
600	3	Do.	5 0 0	9 0 0	8 0 0
1800	10	Do., new shares	6 10 0	7 10 0	8 10 0
1000	25	*Gloucester*, A shares	25 0 0	10 0 0	42 0 0
856	25	Do., B shares	21 15 0	7 10 0	28 0 0
260	20	Godalming	20 0 0	5 0 0	20 0 0
300	5	Do., new shares	5 0 0	5 0 0	5 0 0
100	20	Do., do.	8 0 0		
100	5	Do., do.	2 0 0		
	5	Golborne (L.) £5000			
621	5	*Gomersal*	5 0 0	6 0 0	6 7 6
		Gorleston & Strathdn.			
855	25	*Gosport*	25 0 0	8 0 0	35 0 0
	5	Goudhurst (Limited)			
		Grange & Cartmel District			
450	20	Grantham	20 0 0	7 0 0	28 0 0
1000	20	*Gravesend*	20 0 0	5 0 0	21 0 0
		Grays Thurrock			
643	5	Gt. Berkhampstead	5 0 0	6 0 0	5 10 0
1000	10	*Great Grimsby*	10 0 0	10 0 0	18 15 0
1000	6¼	Do., new shares	6 10 0	10 0 0	11 5 0
1627	10	Do., do.	9 0 0	7 0 0	12 10 0
700	5	Great Harwood	5 0 0	4 5 0	
280	5	Do., new shares	1 0 0		
210	10	Great Marlow	10 0 0	5 0 0	10 0 0
		Great Stanmore			
		Great Torrington			
450	5	Great Wigston	5 0 0	6 0 0	
150	1	Do., new shares	1 0 0	6 0 0	
	5	Greenhithe (Limited)			
	5	Grigley-on-the-Hill (Limited)			
1300	10	Guernsey			
352	25	*Guildford*, A shares	10 0 0	10 0 0	18 0 0
352	3	Do., B shares	25 0 0		
		Do., new shares	3 0 0		
25	200	Guisborough	120 0 0	8 0 0	
		Haddenham (Limited)			
	44/5	Hadleigh Cons. (L.)			
240	5	Hadlow (Limited)			
140	10	Hailsham	5 0 0		
40	50	Halesowen	10 0 0	6 0 0	10 0 0
300	5	Halesworth	50 0 0	6 0 0	
240	5	Haltwhistle (Lim.)	5 0 0	7 10 0	6 5 0
		Hampton Court	5 0 0	4 10 0	5 0 0
500	10	Hanley (Limited)			
500	5	Harrington	10 0 0	5 0 0	10 0 0
450	10	*Harrogate*	4 0 0	6 0 0	
13333½	Sk.	Do., A stock	2 0 0	7 10 0	4 10 0
9000	Sk.	Do., B stock		9 10 0	186 5 0
450	10	Do., new shares		7 10 0	146 5 0
6800	5	*Hartlepool G. & W.*	2 0 0	7 10 0	4 10 0
13200	5	Do., new shares	5 0 0	6 0 0	6 0 0
6597	5	Do., do.	5 0 0	6 0 0	6 0 0
1000	1	Hartley Wintney	2 10 0	6 0 0	2 18 0
		Harwich	1 0 0	2 10 0	21s—23s
300	5	Haslemere			
662	6	*Haslingden*	6 0 0	10 0 0	10 0 0
343	6	Do., A shares	4 0 0	10 0 0	6 0 0
1650	25	*Hastings & St. Leonards*	25 0 0	8 0 0	41 10 0
1500	20	Do.	20 0 0	7 0 0	27 0 0
	1	Haswell Gas & Water (Limited)			
180	10	Hatfield			
	5	Hatherigh (L.) £2000			
		Harlow & Sawbridgeworth			
500	5	Havant			
120	10	Haverhill	5 0 0	3 0 0	5 0 0
840	5	Hawick	10 0 0	5 0 0	10 0 0
	5	Hawkhurst (Limited)	5 0 0	10 0 0	10 0 0
244	5	Haworth			
		Hay (L.), Brecon	5 0 0		5 5 0
		Haydon Bridge			
8500	1	*Hebden Bridge*	1 0 0	10 0 0	1 12 6
170	10	Heckington (Lim.)	10 0 0		10 0 0
		Heckmondwike			
120	10	Hedon (Limited)			
145	12	Helston	10 0 0	3 0 0	
250	10	Hemel Hempstead	12 0 0	9 0 0	
500	10	Henley (Limited)	10 0 0	4 0 0	7 0 0
120	50	*Hereford*	10 0 0	5 0 0	10 0 0
300	10	Herne Bay	50 0 0	10 0 0	
1300	10	*Hertford*	10 0 0	6 0 0	11 0 0
		Hessle (L.) £1500	8 0 0	7 10 0	12 0 0
270	10	Hexham			
160	10	Higham Ferrers	10 0 0	8 0 0	15 0 0
	5	Highbridge (Lim.)	10 0 0	7 0 0	12 0 0
		Highworth, Wilts.			
520	5	High Wycombe	5 0 0	6 0 0	6 16 0
300	10	Hinckley	10 0 0	7 10 0	10 0 0
600	5	Hindley, Lancashire	3 0 0		3 0 0
200	20	Hitchin	20 0 0	8 0 0	
200	5	Do., new shares	5 0 0	8 0 0	
880	5	Hoddesden	5 0 0	7 0 0	6 0 0
	5	Hogsthorpe (L.) £1000			
	5	Holbeach £2000			
		Hollingbourne (Lim.)			
600	20	*Holmfirth*	19 0 0	6 10 0	21 10 0
960	5	Holyhead	5 0 0	6 0 0	6 2 6
		Holywell (*see* Brit. Prov.)			
98	25	Honiton			
1250	1	Honley (Limited)	25 0 0	3 12 0	20 0 0
6	500	Horncastle	1 0 0	5 0 0	1 0 0
	5	Hornchurch (Lim.)	£500		
		Hornsey (Limited)			
1200	2½	Horsforth			
303	20	Horsham	2 10 0		2 10 0
	10	Houghton-le-Spring	20 0 0	10 0 0	30—32
		Howden	10 0 0	8 10 0	27—30
1700	20	*Huddersfield*	20 0 0	10 0 0	37 5 0
250	20	Do., new shares	15 0 0	10 0 0	
		Hull			
		Hull-Sculcoates (*see* Brit. Provincial)			
210	10	Hungerford			
1200	10	*Huntingdon*	10 0 0	5 0 0	10 0 0
250	10	Hunton Bg. & Abbot's Langley (Lim.)	10 0 0	8 0 0	16 10 0
		Hurstpierpoint	10 0 0		
600	10	*Huyton & Roby*	10 0 0	5 0 0	12 10 0
300	10	Do., new shares	9 0 0	5 0 0	11 10 0
2500	10	*Hyde*	9 0 0	5 10 0	10 15 0
	5	Hythe (L.) £2000			
706	10	*Hythe & Sandgate*	10 0 0	5 0 0	10 0 0
		Idle & Eccleshill (*see* Airdale)			
198	12	Ilford			
560	6¼	Ilfracombe	2 0 0	4 0 0	8—9
	10	Ilkeston	6 5 0	11 4 0	8 0 0
	10	*Ilkley*	10 0 0		13—15
		Do.	2 0 0		3—4
250	5	Ilminster			
2800	10	Ingatestone (Limited)	5 0 0	1 10 0	
1400	10	*Ipswich*	10 0 0	10 0 0	17 0 0
200	10	Do.	10 0 0	7 10 0	15 0 0
		Do.	7 10 0		
		Ironbridge			
180	10	Irthlingborough			
800	30	*Isle of Thanet* (Margate & Rams.)	10 0 0	7 0 0	10 0 0
			39 0 0	10 0 0	60 0 0
		Jersey, St. Helier's			
		Kegworth			
363	5	Kelvedon (Limited)			
1842	10	*Kendal United Gas & Water*	5 0 0		
380	20	Do., preference	10 0 0	10 0 0	19 10 0
290	10	Kenilworth (Limited)	20 0 0	7 10 0	33 0 0
400	5	Keswick	10 0 0	4 0 0	10 0 0
228	25	Kettering	5 0 0	6 0 0	4 0 0
		Ketton (L.) Rutland	25 0 0	5 0 0	30 0 0
	5	Keymer & Ditchling (Limited)		7 0 0	
		Keynsham			
500	5	Kibworth	5 0 0	6 0 0	7 0 0
		Kidderminster		5 0 0	
		Kidsgrove			
800	5	Kimbolton	5 0 0	12 0 0	7 10 0
150	10	Kingsbridge	10 0 0	7 0 0	12 0 0
140	7	Kingsclare	7 0 0	7 10 0	11 0 0
		King's Cliffe			
270	5	*King's Lynn*	5 0 0	5 10 0	5 0 0
		Kingston-on-Thames.			
		Kingswinford District (Limited)			
		Kington, Hereford			
400	5	Kinver, Staffordshire			
	1	Kippax (Limited)	5 0 0		5 0 0
		Kirby Lonsdale			
		Kirkburton			
400	5	Kirkby Stephen (L.)			
330	5	Kirkham, Lancash.	5 0 0		
330	2½	Do., new shares	5 0 0	4 0 0	5 0 0
	5	Kirkhampton, Dalton, & Lepton (Lim.) £5000	2 10 0	4 0 0	2 10 0
200	10	Kirton-in-Lindsey	10 0 0	5 0 0	10 10 0
200	5	Knighton (L.)	5 0 0		
1000	10	*Knottingley*			
670	5	Knutsford Gas & W. (Limited)	5 0 0	10 0 0	7 7 6
319	3	Do.	3 0 0	10 0 0	3 10 0
	5	Lamborne (L.) £1200			
		Lampeter, Llandssl., Tregrn. & Aberа.			
30000	Sk.	*Lancaster*	All.	8 0 0	165—170
	5	Langley Mill & Heanor (Limited)			
50	25	Langport	5 0 0	4 0 0	15 0 0
		Launceston			
		Lea Bridge (*see* County & General)			
1500	20	*Leamington Priors*	20 0 0	8 0 0 & Bns.	27—29
1500	20	Do., new shares	11 0 0	7 0 0	13 0 0
213	10	Leatherhead	10 0 0	5 0 0	10 0 0
		Ledbury			
		Leeswood (Limited)			
3900	13	*Leicester*	13 0 0	10 0 0	23 0 0
5000	10	Do., new shares	10 0 0	7 10 0	15 0 0
		Leigh £2000		7 0 0	
476½	21	Leighton Buzzard	21 0 0	8 0 0	30 0 0
500	10	Leominster	10 0 0	7 0 0	12 0 0
330	25	Lewes, A shares	25 0 0	8 0 0	31 5 0
644	5	Do., B shares	5 0 0		6 5 0
245	5	Leyburn, Yorkshire	5 0 0		6 0 0
		Leyland, Lancashire			
250	20	Lichfield	20 0 0	10 0 0	40 0 0
320	25	*Lincoln*	25 0 0	10 0 0	70 0 0
306	5	Lindfield (Limited)	5 0 0	8 0 0	5 0 0
240	5	Liskeard	5 0 0	7 10 0	6 0 0
		Littleborough	5 0 0	10 0 0	5 0 0
240	5	Littlehampton			
	5	Littleport (Limited) £2000			
	8k.	*Liverpool United*	£100	10 0 0	208 0 0
	25	Do.	5 0 0	7 0 0	5 12 6
	10	Llanberis (Limited)			
259	5	Llandovery (Limited)	1 10 0	7 0 0	
1375	10	Llandudno Gas & W. (Limited)	10 0 0	7 0 0	11 0 0
		Llanelly £3000			
		Llanfyllin (L.) £2000			
250	10	Llangollen			
	5	Llanrwerst (Limited)	9 15 0	5 0 0	9 15 0
	10	Llantrissant (L.) £2000			
272	5	*Llynvi Valley*	5 0 0	3 0 0	5 0 0
	5	Loddon			
	5	Long Buckby (Lim.)			
120	10	Longridg. (L.) £10,000			
2000	10	Long Sutton (Lim.)	10 0 0	7 10 0	11—12
1000	10	*Longton*	10 0 0	6 0 0	14 0 0
		Do., new shares	2 0 0	6 0 0	2 5 0
		Longwood, near Huddersfield			
250	5	Lostwithiel	5 0 0	4 0 0	6 0 0
250	1	Do., new shares	1 0 0	5 0 0	1 10 0
1422	6	*Loughborough*	6 0 0	10 0 0	11 15 0
240	25	*Louth*	25 0 0	10 0 0	40 0 0
2500	10	*Lowestoft Gas & W.*			
611	5	Ludlow Union	5 0 0	5 0 0	5 0 0
250	5	Do., pref. shares	5 0 0	5 0 0	
640	10	*Luton*	10 0 0	7 10 0 & Bns.	12 0 0
640	5	Do., preferential	5 0 0	4 0 0	5 0 0
640	5	Do., new shares	5 0 0	7 10 0 & Bns.	6 0 0
100	20	Lutterworth	20 0 0	6 5 0	25 0 0
	5	Lydd (Lim.) £2000			
63	20	Lydney (L.) £3000			
120	25	Lyme Regis	20 0 0	4 0 0	20 0 0
400	10	Lymington	25 0 0	5 0 0	25 0 0
		Lymm	9 0 0	7 0 0	11 0 0
300	10	Maidenhead	10 0 0	5 0 0	10 0 0
500	25	*Maidstone*, A shares	25 0 0	10 0 0	45 0 0
500	25	Do., B shares	25 0 0	4 0 0	20 0 0
	25	Do., new shares	25 0 0	7 10 0	
204	23	Maldon	23 0 0	7 0 0	27 0 0
200	10	Malmesbury	10 0 0	2 10 0	5 15 0
		Malpas (Limited)			
825	10	Malton	10 0 0		
793	7	Do.	7 0 0		
		Malvern Link			
		Manningtree			
300	50	*Mansfield*	50 0 0	10 0 0	100—102
150	10	Mansfield Woodhouse	10 0 0		
		March			
		Margate (*see* Isle of Thanet)			
	10	Market Deeping (L.)			
		Market Drayton			
132	25	Market Harborough	25 0 0	7 0 0	35 0 0
		Market Weighton			
		Markyate Street (L.)			
		Marlborough			
150	10	Marsden (Limited)	10 0 0	5 0 0	10 0 0
	5	Marlock (L.) £2000			

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Dividend per Ct. per Annum.	Last Quotation.
	£		£ s d	£ s d	£ s d
9394	Stk.	*Maryport Town & Harbour*	100 0 0	2 2 10	
59	10	Do.	10 0 0		
600	5	Matlock (Limited)	5 0 0	6 0 0	
508	5	Matlock Bridge, Matlock Bank, & Matlock Town (Limited)	5 0 0	6 0 0	
200	2	Measham (Limited)	1 12 6	5 0 0	
220	10	Melbourne	10 0 0	6 0 0	12 0 0
		Melksham			
934	2	Meltham	2 0 0	4 10 0	
220	20	Melton Mowbray (L.)	20 0 0		
50	10	Mere	10 0 0		
330	35	*Merthyr Tydvil*	35 0 0	10 0 0	50 0 0
3300	Stk.	Do.	All.	5 0 0	100 0 0
120	10	Middleham	1 0 0	5 0 0	10 0 0
		Middletn-in-Teesdale.			
400	5	Midhurst (Limited)	5 0 0	2 10 0	5 0 0
	5	Midsomer Nor. (L.)			
198	5	Mildenhall	5 0 0	5 0 0	
513	10	*Milnrow* (Limited)	10 0 0	5 0 0	
300	5	Milnthorpe (L.) £1500	4 10 0	3 6 8	
184	10	Milverton (Limited)	10 0 0	5 0 0	10 0 0
2000	5	*Mirfield*	5 0 0	5 0 0	6 5 0
3033	10	*Mitcham & Wimble.*	10 0 0		
3033	10	Do., new shares	3 0 0		
650	5	*Mold Gas & Water*	5 0 0	7 10 0	6¼—6½
700	10	Monmouth Gas & W.	10 0 0	5 0 0	10 0 0
250	5	Montgomery (Lim.)	5 0 0		
800	5	Morecambe (Limited)	5 0 0	5 0 0	6 0 0
	5	Moretonhampstead (Limited)			
150	10	Moreton-in-Marsh	9 2 6	4 0 6	9 2 6
1000	5	*Morley*, near Leeds	5 0 0	10 0 0	8 10 0
1000	2	Do.	2 0 0	10 0 0	3 8 0
220		Morpeth	19 10 0	5 0 0	40 0 0
		Mossley			
		Mottram			
	30	Nantwich (Limited)			
	2	Narberth (L.) £2000			
		Nayland			
		Neath			
		Neath New			
185	10	Needham Market	10 0 0	4 0 6	
		Netherthng (L.) £700			
		Newark		10 0 0	
		Newburn			
250	20	Newbury	20 0 0	5 0 0	20 0 0
160000	100	*Newcastle & Gateshd.* A shares	100 0 0	10 0 0	164 0 0
40000	100	Do., B shares	100 0 0	3 10 0	55 0 0
50000	100	Do., C shares	100 0 0	7 0 0	110 0 0
		Newcastle-und.-Lyne			
250	5	Newent	5 0 0		
		Newhaven, Sussex			
		New Malton			
600	5	Newmarket	5 0 0	4 0 0	4 0 0
366	2	Do., preference	2 0 0	6 0 0	2 0 0
		New Mill (L.) £7000			
200	20	*New Mills & Hayfield*	20 0 0	7 10 0	
70	20	Newnham (Limited)	20 0 0	10 0 0	37 10 0
	5	Newport, Essex (L.), £2000			
		Newport, I. of Wight			
		Newport Pagnell			
360	35	*Newport*, Mon., A sh.	35 0 0	9 0 0	50 0 0
540	35	Do., B shares	35 0 0	7 10 0	42 10 0
		Newport, Salop			
250	5	New Romney (Lim.)	5 0 0	5 0 0	5 0 0
	20	Newton Abbott			
198	10	Newtown, Montgmy	10 0 0	6 0 0	10 0 0
	5	Northallerton			
777	20	*Northampton*, A sh.	20 0 0	10 0 0	36 0 0
777	20	Do., B shares	20 0 0	4 0 0	14 0 0
777	20	Do., new shares	20 0 0	7 10 0	28 0 0
2331	5½	Do.	5 13 4	7 10 0	7 10 0
	1	*North Bierley*	1 0 0		1½—1¾
		Northfleet (*see* C. & G)			
		Northleach			
605	5	North Ormesby (L.)	5 0 0	6 0 0	
120	10½	North Walsham	10 10 0	5 0 0	10 15 0
371	15	Northwich	15 0 0	5 0 0	15 0 0
		Norwich (*see* Brit. P)			
4600	50	*Nottingham*	50 0 0	5 10 0	60 0 0
	50	Do., new shares	50 0 0	5 10 0	63 0 0
268	8	Nuneaton (Limited)	8 0 0	5 0 0	7 10 0
125	8	Do., new shares	8 0 0	5 0 0	7 10 0
		Oaken Gates, Salop			
240	5	Oakhampton (Lim.)	5 0 0		
200	10	Odiham	10 0 0	6 0 0	10 10 0
140	5	Ogley Hay & Brownhills (Limited)			
320	5	Old Goole (Lim.)	5 0 0	6 0 0	5 0 0
		Olney			
360	10	*Ormskirk*, old shares	10 0 0	8 0 0	14 0 0
1080	10	Do., new shares	4 10 0	8 0 0	6 4 6
2400	5	*Ossett & Horbury*	5 0 0	10 0 0	10 0 0
600	5	Do., new shares	2 0 0	10 0 0	5 5 0
		Oswestry			
		Otley, Yorkshire			
80	25	Oundle	25 0 0	7 0 0	25 0 0
600	15	*Over Darwen*, orig.	15 0 0	5 0 0	19 0 0
600	15	Do., A shares	15 0 0	5 0 0	19 0 0
1200	15	Do., B shares	7 10 0	5 0 0	10 0 0
1694	1	Over & Wharton. (L.)	1 0 0		1 2 0
320	5	Owston Ferry (L.)	5 0 0	5 0 0	5 0 0
720	25	*Oxford*	25 0 0	9 10 0	50 0 0
240	25	Do., B shares	25 0 0	5 0 0	25 0 0
1527	5	Padiham	5 0 0	6 0 0	6 0 0
338	2½	Painswick	2 10 0		2 10 0
		Pangbourne (L)			
		Pately Br., Yorkshire			
300	5	Peel, Isle of Man	5 0 0	7 0 0	6—7
		Pembroke (*see* County & General)			
500	20	*Peniston*			
	5	Penkridge (Limited)			
250	20	Penrith	15 0 0	6 10 0	21 0 0
153	20	Penzance	20 0 0		15 0 0
		Pershore			
3000	10	*Peterborough*			
320	5	Petersfield	5 0 0	5 0 0	
300	10	Petworth	10 0 0	9 17 6	15 0 0
1250	2	Pewsey (Limited)	2 0 0	6 0 0	2 0 0
		Pickering			
2500	10	*Plymouth & Stnhouse*	10 0 0	10 0 0	19 0 0
2500	10	Do., new shares	10 0 0	7 10 0	14 0 0
2500	10	Do., new shares	3 0 0	7 10 0	4 10 0
160	10	Pocklington	10 0 0		5 0 0
		Ponder's End & Enfield Highway (L)			
		Pontefract			
		Pontypridd		4 0 0	
400	10	Poole	10 0 0	10 0 0	15 0 0
344	2	Do., new shares	2 0 0	10 0 0	3 0 0
	10	Porth Cawl (Limited)			
643	5	Port Madoc (Limited)	5 0 0	5 0 0	
		Port Talbot			
500	10	Portishead	10 0 0	3 0 0	10 0 0
250	10	Do., new shares	1 0 0		
600	53	*Portsea Island*	53 0 0	8 0 0	60 0 0
600	50	Do., new shares	50 0 0	8 0 0	57 0 0
600	50	Do., new shares	49 0 0	8 0 0	56 0 0
	Stk.	Do.		5 0 0	92 0 0
	5	Potter's Bar (Lim.)			
120	10	Potton, Bedfordshire	10 0 0	5 0 0	10 0 0
400	10	*Prescot*	10 0 0	5 0 0	
		Presteigh			
120000	Stk.	*Preston*	All.	10 0 0	210 0 0
12000	,,	Do.	All.	7 0 0	140 0 0
	5	Prittlewell (L.) £2000			
1000	10	Provincial (Hull)	8 0 0		8 0 0
600	20	*Pudsey*	20 0 0	10 0 0	35 0 0
600	6⅔	Do., new shares	6 13 4	10 0 0	11 13 4
600	20	Do.	20 0 0	7 0 0	26 0 0
600	6⅔	Do.	6 13 4	7 0 0	8 13 4
600	20	Do.	2 0 0	7 0 0	3 10 0
600	6⅔	Do.	0 13 4	7 0 0	1 3 4
93	20	Pwllheli	20 0 0	2 10 0	25 0 0
600	5	Quorndon & Mountsorrel	5 0 0	7 0 0	12 0 0
		Radcliff & Pilkington, No. 1	10 0 0		
2100	10	Do., No. 2	6 0 0		
		Rainhill			
200	20	Ramsay, I. of Man	20 0 0	10 0 0	33 10 0
		Ramsey, Hunts			
		Ramsgate (*see* Isle of *Rastrick* . [Thanet)			
		Rawmarsh			
20000	Sk.	*Reading*	100 0 0	8 0 0	142 0 0
5000	Sk.	Do.	100 0 0	5 0 0	102 0 0
1000	10	Do.	10 0 0	7 0 0	13 0 0
500	10	Do., preference	10 0 0	5 0 0	10 10 0
1300	10	Do., new shares	10 0 0	7 0 0	11 7 0
		Redbourn (L) . £1100			
400	5	Redcar	5 0 0	4 0 0	5 0 0
1200	5	*Redhill*	5 0 0	7 0 0	6 0 0
		Redruth			
		Reigate			
1200	1	Repton (Limited)	1 0 0	5 0 0	1 1 0
2000	10	*Richmond*, Sur. (L.)	10 0 0	7 0 0	15 0 0
400	10	*Risca & Pontymster*	10 0 0	5 0 0	
600	5	Do.	5 0 0	4 0 0	
600	5	Rhosllanerchrugog	3 0 0	7 10 0	4 15 0
		Rhymney (Limited)			
400	5	Rickmansworth	5 0 0		5 0 0
180	10	Ringwood	10 0 0	5 0 0	10 0 0
		Ripley			
		Risborough			
	5	Robertsbridge (Lim.)			
		Robin Hood's Bay			
280	50	*Rochester & Chatham*		6 0 0	
		Rochford			
2600	5	Romford	5 0 0	6 0 0	5 5 0
220	10	Romsey	10 0 0	7 10 0	12 10 0
3093	10	Rossendale Union	10 0 0	10 0 0	17 2 6
600	10	Do., preference	10 0 0	10 0 0	17 2 6
2597	10	Do., new issue	6 3 0	10 0 0	11 12 6
1503	10	Do., second issue	10 0 0	7 0 0	12 10 0
		Rothwell			
		Rowley Regis & Blackheath . . £4000			
350	10	Royston	10 0 0	5 0 0	9 10 0
500	5	Ruabon	5 0 0	1 10 0	4 0 0
150	20	Rugby	20 0 0	10 0 0	
150	5	Do., ¼ shares	5 0 0	10 0 0	
150	6¼	Do., ¼ shares	6 13 4	10 0 0	
150	10	Do., new shares	10 0 0	10 0 0	
150	2½	Do., do.	2 10 0	10 0 0	
150	3¾	Do., do.	3 6 8	10 0 0	
430	10	Rugely	10 0 0	5 0 0	10 10 0
4800	5	*Runcorn*	5 0 0	10 0 0	9 0 0
114	31½	Ruthin	31 5 0	6 16 0	40 0 0
1500	12½	*Ryde*	12 10 0	8 0 0	15 0 0
500	5	Rye	5 0 0	6 0 0	6 0 0
		Saddleworth			
225	20	Saffron Walden	20 0 0	5 0 0	20 0 0
225	20	Do.	10 0 0		
1400	5	*St. Alban's Gas & Water* (Limited)	5 0 0	5 0 0	5 5 0
320	5	St. Asaph (Limited)	5 0 0		
		St. Austell			
		St. Bees (Limited)			
		St. Colomb			
4600	10	*St. Helen's*	10 0 0	10 0 0	20 0 0
1500	10	Do.	8 0 0		
		St. Ives, Cornwall			
		St. Mary's Cray			
320	5	Salcombe	5 0 0		
880	12½	*Salisbury*	12 10 0	10 0 0	17 10 0
160	12½	Do., preference	12 10 0	6 0 0	15 0 0
160	12½	Do., new shares	12 10 0	8 0 0	16 0 0
341	10	Sandbach	10 0 0	5 0 0	12 10 0
		Sandown (Limited)			
381	10	Sandwich	10 0 0	5 0 0	
		Sandy, Beds			
	5	Sawston (Lim.) £2000			
100	10	Saxmundham	10 0 0	5 0 0	
2000	10	*Scarborough*	10 0 0	7 0 0	13 0 0
1000	10	Do.	6 0 0	7 0 0	12 2 6
240	5	Sedburgh	5 0 0		
300	16	Selby	16 0 0	7 10 0	
140	5	Settle (Limited)	3 10 0	5 0 0	
290	10	Sevenoaks	10 0 0	4 0 0	10 0 0
400	10	Shaftesbury (Limited)	10 0 0	6 0 0	10 0 0
565	5	Sheepshed (Limited)	5 0 0	6 0 0	6 0 0
135000	Sk.	*Sheffield United*, A stock			199—200
199854	Sk.	Do., B stock	100 0 0	10 0 0	197—198
310	15	Do.	10 0 0	10 0 0	
533	6	Do.	4 0 0	10 0 0	
297	3	Do.	2 0 0	10 0 0	
307	1½	Do.	1 0 0	10 0 0	
10321	10	Do.	2 0 0	7 10 0	6 5 0
600	5	Shefford (Limited)	4 0 0		
		Shelton, Potteries (*see* British Prov.)			
3300	5	Sheppy, Sheerness	5 0 0	10 0 0	7 0 0
800	5	Do., pref. shares	5 0 0	4 0 0	5 0 0
400	5	Do., A shares	4 0 0	10 0 0	6 0 0
350	10	Shepton Mallet	10 0 0	7 10 0	10 0 0
120	10	Shepton-und.-Wychwood (Limited)			
1500	5	Sherborne	5 0 0	6 0 0	6 0 0
		Shiffnal, Salop			
1000	5	*Shipley*	5 0 0	6 0 0	10—10½
	1¾	Do.	1 13 4		3 10 0
	10	Do.	10 0 0		19½—20
	3½	Do.	3 6 8		6¼—6⅞
150	10	Shipston-on-Stour	10 0 0	4 0 0	
		Shirley & Freemantle, Hants			
240	25	*Shotley Bridge*	25 0 0	7 0 0	26½—27
240	10	Do., new shares	10 0 0	7 0 0	
1000	10	*Shrewsbury*, A sh.	10 0 0	10 0 0	20 0 0
1000	10	Do., B shares	10 0 0	5 0 0	10 0 0
1000	10	Do., new shares	10 0 0	7 10 0	15 0 0
		Sible Hedingham			
	5	Sidmouth (L.) . £4000			
7000	Stk.	*Skipton*	100 0 0	9 0 0	150 0 0
400	2½	Do., new shares	2 10 0	5 0 0	3 0 0
		Slaithwaite			
600	10	Sleaford	10 0 0	5 0 0	12 12 6
250	10	*Slough*	10 0 0		
340	5	Snaith	5 0 0		4 0 0
		Soham			
500	5	Solihull (Limited)	4 0 0		
	5	Somersham (L.) . £1500			
150	10	Somerton	10 0 0		
354	5	Southam	5 0 0		
1000	50	*Southampton*	50 0 0	10 0 0	
974	5	S. Bank & Nor. (L.)	5 0 0	5 0 0	6 0 0
		Southborough			
		Southend, Essex			
		Southgate & Colney Hatch			
220	10	South Molton	10 0 0	5 10 0	7 10 0
		South Petherton (L.)			
4000	10	*South Shields*	10 0 0	9 0 0	15 10 0
2000		Do.	3 10 0	7 0 0	5 0 0
248	10	Southwell (Limited)	10 0 0	5 0 0	11—11½
300	5	Southwold	5 0 0	5 0 0	5 0 0
1470	1	Spennymoor (Limited)	1 0 0		
400	5	Spilsby	5 0 0		
		Spittal, Berwick-on-Tweed			
2000	6⅔	*Stafford*	6 13 4	10 0 0	9½—10
2000	6⅔	Do., new shares	6 0 0	8 0 0	6½—7
178	5	Staindrop	5 0 0	6 0 0	5 0 0
248	25	Staines & Egham	25 0 0	6 0 0	26—27
		Staithes . . . £1500			
		Staley Bridge		10 0 0	
225	50	*Stamford & St. Martin's*	50 0 0	9 0 0	75 0 0
	5	Staplehurst (Limited) £2000			
150	10	Staveley (Limited)	10 0 0	5 0 0	11 10 0
300	5	Stevenage	5 0 0	5 0 0	5 0 0
2500	10	*Stoke, Fenton & Long.*	10 0 0	10 0 0	
500	10	Do.	2 0 0	10 0 0	
400	5	Stone, Stafford	5 0 0	5 0 0	6 0 0
220	10	Stoney Stratford	10 0 0	4 10 0	9 0 0
		Storrington (L) £1000			
15060	Sk.	*Stourbridge*	All.	5 0 0	
200	20	Do., new shares			
1100	1	Stow-on-the-Wold	1 0 0	5 0 0	1 0 0
150	20	*Stratford-on-Avon*	20 0 0	10 0 0	42 0 0
150	5	Do., new shares	5 0 0	10 0 0	10 10 0
300	10	Do., do.	10 0 0	7 0 0	15 0 0
375	8	Do., preference	8 0 0	5 10 0	9 10 0
750	5	*Stretford*	5 0 0	9 0 0	5 0 0
		Stroud			
261	20	Sudbury	20 0 0	6 10 0	21 10 0
		Sunbury (L.), Mid.			
90600	Sk.	*Sunderland*	100 0 0	10 0 0	180 0 0
25000	Sk.	Do., new	100 0 0	8 10 0	160 0 0
200	10	Sutton Coldfield (L.)	10 0 0		10 0 0
500	10	Sutton-in-Ashfield	10 0 0	8 0 0	15 0 0
600	5	Sutton & Hooton Gas & W. (Limited)			
		Sutton Southcoates & Drypool, Hull	20 0 0		23—24
		Sutton, Surrey			
465	5	Sutton Valence	5 0 0	5 0 0	5 0 0
600	5	Swadlincote	5 0 0	5 0 0	6 0 0
169	10	Swaffham	10 0 0	5 0 0	7 0 0
	5	Swanage (L.) . £2500			
240	25	*Swansea*	25 0 0	10 0 0	50 0 0
1930	25	Do., new shares	25 0 0	7 10 0	35 0 0
655	10	Swindon			
		Swindon New (L.)			
200	10	Swineshead (Lim.)	10 0 0	5 0 0	10 5 0
1000	5	Swinton & Mexboro'	5 0 0	7 0 0	7 0 0
180	10	Syston	10 0 0		10 0 0
276	5	Tadcaster	5 0 0	5 0 0	3 0 0
		Tamworth			
		Taporley (Limited)			
		Tattershall & Coningsby (Limited)			
2800	5	*Taunton*	5 0 0	7 0 0	6 15 3
2800	5	Do., new shares	4 10 0		5 0 0
800	5	Tavistock	3 3 2	12 0 0	6 0 0
200	5	Tenbury Union	5 0 0	5 0 0	5¼—6
150	10	Tenterden	10 0 0	4 0 0	8 0 0
200	10	Tetbury, Gloster	9 0 0	10 0 0	16 0 0
	5	Tewkesbury (Lim.)			
200	10	Thame	10 0 0	5 0 0	10 0 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Dividend per Ct. per Annum.	Last Quotation.
	£		£ s d	£ s d	£ s d
250	10	Thetford	10 0 0	6 0 0	10—11
830	10	Thirsk	10 0 0		10 0 0
150	10	Thrombury (Limited)	10 0 0	4 0 0	
80	1	Do., new shares	1 0 0	4 0 0	
356	5	Thorne	5 0 0		4 0 0
160	10	Thrapston (Limited)	10 0 0	5 0 0	10 0 0
	5	Ticehurst Cons. (Lim.)			
		Tideswell (L.) . £2000			
1885	5	Todmorden (Lim.)	5 0 0	7 10 0	7 10 0
1870	5	Do., B shares	3 0 0	7 10 0	4 10 0
600	24	Topsham (Limited)	2 10 0	5 0 0	
		Torpoint (Limited)			
		Torquay			
		Torrington, Devon.			
		Totnes			
		Totnes Consumers			
5000	5	*Tottenham & Edm.*	5 0 0	8 0 0	6 0 0
150	10	Towcester	10 0 0	5 0 0	10 0 0
		Town-Malling			
300	5	Towyn (L.) Merion.	5 0 0		5 0 0
	42	Trecastle (Limited)			
275	10	Tring	10 0 0	5 0 0	10 0 0
		Trowbridge (*see* B. Provincial)			
320	25	Truro	25 0 0	10 0 0	
320	5	Do., new	5 0 0	10 0 0	
		Tunbridge			
2000	10	*Tunbridge Wells*	10 0 0	10 0 0	19 0 0
	5	Turvey (Limited)			
100	10	Tuxford	10 0 0	5 0 0	12 0 0
		Twyford (Limited)			
345707	8k.	*Tynemouth*	All.	0 0 0	130 0 0
		Ulverston			
		Uppingham			
240	5	Upton-on-Severn	5 0 0	5 0 0	5 0 0
	5	Upwell & Outwell (Limited) . £2500			
400	5	Usk (Limited)	5 0 0	10 0 0	8 8 0
300	10	Uttoxeter	10 0 0	5 0 0	12 10 0
		Uxbridge & Hill			
1500	20	*Ventnor*	11 0 0	7 0 0	12 0 0
160	10	Wainfleet (Limited)	10 0 0		8 0 0
1000	25	*Wakefield*	25 0 0	10 0 0	44 0 0
3660	5	Do.	5 0 0	10 0 0	8 16 0
1732	5	Do., new shares	5 0 0	7 10 0	6 15 0
400	5	Walker & St. Anthony (Limited)	5 0 0		7¾—8¼
		Walker & Wall. Un.			
300	10	Wallingford	10 0 0	5 0 0	8 0 0
	10	*Waltham Abbey*			
2000	10	*Walton-on-Thames*		4 0 0	
	10	Walton-on-the-Naze Gas and Water			
200	10	Wantage	9 0 0	5 0 0	10 10 0
3500	2	Ware (Limited)	2 0 0	7 0 0	2 8 0
100	10	Wareham	10 0 0	3 10 0	8 0 0
2000	1	Warkwth & Amble	1 0 0	3 10 0	
200	25	Warminster	25 0 0	6 0 0	28 0 0
1800	20	*Warrington*	20 0 0	10 0 0	37 0 0
		Warth			
		Warwick . . £15,000		6 0 0	
		Watchet & W. . £2500			
	2	Waterbeach (L.) £2000			
		Watford			
400	10	Weedon (Limited)	10 0 0	6 10 0	12 10 0
400	3	Do., new shares	1 10 0	6 10 0	1 17 6
111	25	Welchpool, Montgy.	25 0 0	5 0 0	25 0 0
200	25	Wellingborough	25 0 0	5 0 0	25 0 0
1200	10	Wellington, Salop	10 0 0	7 10 0	10—11
200	20	Wellington, Somer.	20 0 0	7 10 0	22 0 0
160	25	*Wells*, Somerset	25 0 0	10 0 0	
		Wem (Limited) £2000			
	5	Wendover (Lim.)			
		West Auckland & St. Helen's, Auckland (Limited)			
160	10	Westbury	10 0 0		
		West Cowes			
225	10	Westerham (Limited)	10 0 0	5 0 0	11 0 0
209	5	Westhoughton (L.)	2 10 0		
		West Kent			
454	5	West Malling Gas & Water	5 0 0	3 0 0	4 10 0
200	20	*Weston-super-Mare*, A shares	20 0 0	10 0 0	35 0 0
200	20	Do., B shares	20 0 0	7 10 0	27 0 0
800	20	Do., C shares	13 10 0	7 10 0	
200	5	Wetherby	5 0 0		1 10 0
3000	10	*Weymouth Cons.*	10 0 0	5 0 0	10 0 0
		Whaley Bridge			
1743	20	Whitby (Limited)	20 0 0		20 0 0
2300	1	Whitchurch, Hants	0 10 0	5 0 0	
400	20	Whitehaven	20 0 0		14 0 0
		Whitehaven New			
		Whitstable			
		Whittington			
250	10	Whittlesea	10 0 0	5 0 0	11 0 0
300	10	Whitwick & Coalville	10 0 0		10 0 0
1200	5	*Whitworth Vale*	5 0 0	4 0 0	7 0 0
1200	5	Do., new shares	4 7 6	4 0 0	6 7 6
	5	Wickam M. (L.) £1000			
		Widnes Gas & Water			
1250	10	*Wigan*	10 0 0	10 0 0	20 0 0
1250	10	Do., preference	10 0 0	5 0 0	10 0 0
2500	10	Do., new shares	5 0 0	7 10 0	8 15 0
400	5	Wigston	5 0 0	6 0 0	5 0 0
		Wigton, Cumberland			
1020	5	*Willenhall*, A shares	5 0 0	10 0 0	9 0 0
1020	54s.	Do., B shares	2 14 0	5 0 0	2 14 0
510	5	Do., new C shares	5 0 0	7 10 0	7 0 0
918	5	Do., do.	0 10 0	7 10 0	
		Wilton			
	10	Wimborne Minster	10 0 0		
	10	Wincanton	10 0 0	7 0 0	
		Winchcombe . £1500			
1610	25	*Winchester Gas & Water*	25 0 0	5 0 0	25 0 0
		Windermere District			
1200	20	*Windsor* (Limited)	20 0 0	9 0 0	25 0 0
1200	8	Do., pref. shares	8 0 0	5 0 0	8 0 0
120	20	Do.	20 0 0	7 0 0	20 0 0
141	10	Winslow	10 0 0	6 0 0	10 0 0
120	10	Winterton (Limited)	10 0 0	5 0 0	
120	5	Do., new shares	5 0 0	5 0 0	
200	10	Wirksworth	10 0 0	5 0 0	10 0 0
		Wisbeach			
		Witham			
		Witney			
400	5	Wivelscombe (Lim.)	5 0 0	6 0 0	5 5 0
		Wivenhoe (L) . £2000			
200	10	Woburn	10 0 0	5 0 0	11 0 0
		Woking			
210	10	Wokingham	10 0 0	5 0 0	
54480	8tk.	*Wolverhampton*	100 0 0	10 0 0	195 0 0
4448	10	Do., new shares	9 10 0	10 0 0	18 10 0
550	10	Woodbridge (Lim.)	10 0 0	10 0 0	
660	24	Woodstock	2 10 0	5 0 0	
		Woodhouses			
200	7	Wooler	7 0 0		
		Woolton			
2400	5	*Woolwich Consumers*	5 0 0	10 0 0	8 0 0
2400	5	Do., do.	5 0 0	7 10 0	7 0 0
4800	5	Do., do.	3 0 0	7 10 0	4 0 0
		Woolwich Equitable			
		Wootton Bassett			
2500	10	*Worcester*	10 0 0	10 0 0	20—22
		Workington			
600	10	*Worksop*	10 0 0	8 0 0	
600	5	Do., new shares	5 0 0	7 0 0	
650	10	*Worthing*	10 0 0	6 0 0	10—10¼
		Worsboroughdale & Worsborough			
270	12	Wotton-under-Edge	12 0 0	4 0 0	40 0 0
1500	10	*Wrexham*	10 0 0	4 0 0	11 5 0
		Writtle			
		Wye, Kent			
		Wylam			
400	5	Wymondham	5 0 0	6 10 0	5 0 0
		Yarmouth, Isle of Wight			
800	30	*Yarmouth, Norfolk*	30 0 0	7 10 0	
800	7½	Do., ¼ shares	7 10 0	7 10 0	
	5	Yatton Consumers (L)			
1675	4	*Yeadon & Guiseley*	4 0 0	5 0 0	4 8 0
1675	2	Do., new shares	0 5 0	5 0 0	0 5 6
280	30	Yeovil	30 0 0	6 0 0	30 0 0
280	10	Do.			
140	10	Do., new shares	10 0 0	6 0 0	10 0 0
		York Town			
15000	10	*York United*	5 0 0	10 0 0	11 5 0
5000	5	Do.	4 0 0	10 0 0	9 5 0
		Yoxford			
	5	Ystalyfera (L.) . £4000			
	10	*Ystrad Gas & W.*	2 0 0		
	5	Ystrad Rhondda (L.)			

SCOTLAND.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Dividend per Ct. per Annum.	Last Quotation.
	£		£ s d	£ s d	£ s d
26000	24	Aberdeen	2 10 0	10 0 0	5 1 0
700	1	Aberlady			
		Abernethy			
		Aberlour (L.) . £650			
500	10	Airdrie	10 0 0	9 0 0	14 10 0
		Alloa			
		Alva, near Stirling			
		Alyth			
600	7	Annan	7 0 0	6 0 0	7 0 0
1600	1	Anstruther & Cellardyke	1 0 0	8 0 0	1 6 0
825	20	Arbroath	20 0 0	7 10 0	30 0 0
125	20	Ardrossan	20 0 0	8 0 0	20 0 0
658	1	Auchinleck	1 0 0		
381	5	Auchterarder	5 0 0	7 10 0	7 10 0
750	2	Auchtermuchty	2 0 0	6 0 0	2 10 0
2932	5	Ayr	5 0 0	6 0 0	6 8 0
1250	2	Ayr & Newton Cons.	2 0 0	6 0 0	2 2 0
300	10	Banff	10 0 0	6 0 0	11 0 0
2158	1	Barrhead	1 0 0	7 10 0	1 0 0
200	5	Bathgate	5 0 0	5 0 0	5 0 0
		Beith			
976	1	Bervie	1 0 0	5 0 0	
		Biggar			
739	5	Blairgowrie	5 0 0	8 0 0	7 0 0
		Blantyre (Limited)			
400	6	Borrowstowness	6 0 0	5 0 0	6 0 0
540	5	Brechin	5 0 0	11 0 0	12 0 0
		Bridge of Allan			
8350	2	Broughty Ferry	2 0 0	6 0 0	2 4 0
		Callender			
		Campbelton			
		Carluke, Lanark			
250	4	Carnoustle	4 0 0	7 10 0	4 0 0
178	5	Castle Douglas	5 0 0	5 0 0	5 0 0
2530	3	Coatbridge	3 0 0	10 0 0	5 0 0
200	5	Coldstream	5 0 0	6 0 0	5 0 0
		Collinsburgh			
1000	1	Comrie	1 14 8	4 10 0	1 14 8
		Corstorphine			
1200	1	Crail, Fife	1 0 0	5 0 0	1 0 0
2744	1	Crieff	1 0 0	10 0 0	1 15 0
600	1	Cullen	1 0 0	5 0 0	0 15 0
280	24	Cumbernauld	2 10 0	5 0 0	2 10 0
200	5	Cumnock	5 0 0	6 0 0	6 0 0
600	5	Cupar Angus	5 0 0	7 0 0	6 10 0
250	10	Cupar Fife	10 0 0	10 0 0	18 10 0
300	10	Dalkeith	10 0 0	10 0 0	20 0 0
		Deanston			
750	2	Denny	2 0 0	6 5 0	2 5 0
		Denny Consumers			
	5	Dornoch			
500	1	Douglas	1 0 0	6 0 0	1 2 0
		Dufftown			
		Dumbarton			
400	20	Dumfries	14 0 0	7 2 10	14 10 0
391	5	Dunbar	5 0 0	6 0 0	5 10 0
		Dunblane			
860	10	Dunfermline	10 0 0	10 0 0	16 10 0
		Dunkeld			
1750	2	Duncon	2 0 0	6 0 0	2 3 0
		Dunse			
250	5	Dysart	5 0 0	7 10 0	6 10 0
2327	1	East Wemyss	1 0 0	6 0 0	1 2 0
750	1	Ecclefechan	1 0 0		
6600	25	*Edinburgh*	25 0 0	10 0 0	53 10 0
6000	25	*Edinburgh & Leith*	23 0 0	8 0 0	35 0 0
621	12	Elgin	12 0 0	6 0 0	13 0 0
1300	1	Elie & Earlsferry	1 0 0	7 5 0	1 3 0
		Ellon			
		Errol			
		Eyemouth			
	14	Falkirk	14 0 0	7 0 0	14 0 0
		Falkirk, New			
632	2	Falkland	2 0 0	5 0 0	2 0 0
		Fettercairn			
2000	1	Ferry Port on Craig	1 0 0	6 5 0	1 3 0
581	1	Fochabers	1 0 0	5 0 0	1 2 0
1440	5	Forfar	5 0 0	7 10 0	7 12 6
360	5	Do., new shares	2 10 0	7 10 0	6 10 0
		Fort William			
2000	1	Fraserburgh	0 16 0	5 0 0	0 18 0
1800	5	Galashiels	5 0 0	10 0 0	8 0 0
		Gatehouse, near Fleet			
900	24	Girvan	2 10 0	6 0 0	2 10 0
		Grahamston			
190	10	Grangemouth	10 0 0	5 0 0	10 0 0
400	8¾	Haddington	8 5 0	7 10 0	11 10 0
	1	Hamilton Corporation & Consumers			
	5	*Hamilton, New*	5 0 0	4 10 0	6 0 3
1480	5	Hawick	5 0 0	10 0 0	9 0 0
300	5	Helensburgh	5 0 0	7 10 0	7 10 0
2000	2	Holywood (Limited)	2 0 0	7 10 0	3 0 0
1312	1	Huntly	1 0 0	7 10 0	1 5 0
268	2	Innellan (Limited)			
250	5	Inverary	5 0 0	10 0 0	6 12 6
1500	1	Inverkeithing (L.)	1 0 0	3 0 0	1 0 0
800	1	Inverkip (Limited)	0 10 0		
1200	10	*Inverness Gas & W.*	10 0 0	7 10 0	13 0 0
2400	5	Do., new shares	5 0 0	7 10 0	6 10 0
		Inverury			
	10	Irvine	10 0 0	10 0 0	14 0 0
	24	Do.	2 10 0	10 0 0	3 12 6
300	5	Jedburgh	5 0 0	7 10 0	7 10 0
		Johnstone, Paisley			
		Kamesburgh (Lim.)			
1300	1	Keith	1 0 0	5 0 0	0 11 0
600	5	Kelso	5 0 0	10 0 0	11 0 0
620	2	Kelsyth	2 0 0	5 0 0	2 0 0
950	1	Kennoway	1 0 0	5 0 0	1 1 0
1515	1	Kettle Freuchie, &c.	1 0 0	5 0 0	5 0 0
600	25	Kilmarnock	25 0 0	7 10 0	30 0 0
600	25	Do., new shares	7 10 0	7 10 0	
334	5	Kincardine	5 0 0	5 0 0	4 10 0
		Kinghorn			
		Kingskettle, Fife			
		Kinross			
1200	5	Kirkcaldy	5 0 0	10 0 0	10 10 0
320	8	Kircudbright	8 0 0	5 0 0	8 0 0
997	5	Kirkintulloch	3 0 0	6 13 4	3 7 0
		Kirkwall			
		Kirriemuir			
		Lanark			
3500	1	Lanark Consumers (L)	1 0 0	7 10 0	1 2 6
		Largo, near Leven			
280	8	Largs	8 0 0	7 10 0	8 10 0
1309	1	Lasswade	1 0 0		
177	5	Lauder	5 0 0	5 0 0	5 0 0
		Laurencekirk			
000	1	Leslie, Fife	1 0 0	7 10 0	1 5 0
618	1	Lesmahago	1 0 0	6 0 0	1 0 0
		Leuchars			
906	5	Leven	5 0 0	10 0 0	7 0 0
100	10	Linlithgow	10 0 0	10 0 0	19 0 0
		Linton			
		Lochee, near Dundee			
434	5	Lochgilphead (Lim.)	5 0 0	7 0 0	5 10 0
380	5	Lochwinnock	5 0 0	3 10 0	4 0 0
	4 4/5	Lockerbie (Limite)d	5 0 0		
		Macduff			
1200	1	Markinch, Paisley	1 0 0	8 0 0	1 5 0
		Maryhill, nr. Glasgow			
282	3	Mauchline	3 0 0	5 0 0	3 0 0
667	5	Maxwell Town & Dum-fries	5 0 0	5 0 0	3—3¼
423	5	Maybole, Ayrshire	5 0 0	4 10 0	5 0 0
		Meigle (Lim.) . £700			
373	2	Melrose	2 0 0	7 10 0	2 10 0
718	2	Mid & East Calder	2 0 0		2 0 0
200	5	Moffat	5 0 0	5 0 0	
120	24	Do., new shares	2 10 0	5 0 0	
400	20	Montrose	20 0 0	10 0 0	35 0 0
		Muirkirk (L.) . £1000			
1000	5	Musselburgh	5 0 0	8 0 0	9 9 0
618	1	Nairn	1 0 0	5 0 0	1 0 0
		Neilston, n. Glasgow			
300	5	Newburgh, Fife	5 0 0	8 0 0	7 0 0
300	1	Do., new shares	1 0 0	8 0 0	
1200	1	Newmilns	1 0 0	7 10 0	1 2 0
		Newport, nr. Dundee			
1300	1	Newport, Fife	1 0 0	5 0 0	1 1 0
		Newton-on-Ayre			
107	14¼	Newton Stewart	14 10 0	5 0 0	14 10 0
300	5	N. Berwick, N.B.	5 0 0	5 0 0	7 10 0
		North Queensferry			
245	5	Oban	5 0 0	7 10 0	5 7 6
1000	5	Peebles	5 0 0	6 0 0	5 0 0
500	24	Do., new shares	2 10 0	6 0 0	2 10 0
1000	25	Perth, A shares	25 0 0	8 0 0	30 0 0
1000	5	Do., B shares	5 0 0	8 0 0	6 0 0
3000	5	Perth, New	5 0 0		0 3 0
		Peterhead			
2000	1	Pettenween	1 0 0	6 0 0	1 1 0
2416	1	Polloksbaws	1 0 0	7 10 0	1 5 0
		Port Glasgow			
		Portobello			

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Dividend per Ct. per Annum.	Last Quotation.
	£		£ s d	£ s d	£ s d
		Portsoy			
200	5	Prestonpans	5 0 0	6 0 6	
1594	1	Renton, Dumbarton	1 0 0	7 10 0	1 1 6
		Rothes			
1500	1¼	Rutherglen	1 6 8	5 0 0	1 6 8
250	12	St. Andrew's	12 0 0	8 6 8	16 10 0
193	12	Do., new shares	12 0 0	8 6 8	16 10 0
400	5	Saltcoats	5 0 0	7 10 0	6 0 0
936	1	Sanquhar	1 0 0	5 0 0	0 15 0
30	1	Do., preference	1 0 0	5 0 0	
507	5	Selkirk	5 0 0	10 0 0	10 0 0
	2	Slamannan (Limited)			
508	1	South Queensferry	1 0 0	5 0 0	1 0 0
200	5	Stewarton	5 0 0	10 0 0	6—6¼
7450	2	Stirling	2 0 0	10 0 0	4 0 6
2500	1	Stonehaven	1 0 0	6 5 0	1 5 0
1110	1	Stonehouse	1 0 0	7 10 0	13s—15s
600	2½	Stornoway	2 10 0	8 0 0	3 10 0
		Stow (Limited)			
500	5	Stranraer	5 0 0	10 0 0	6 13 6
588	2	Strathaven	2 0 0	8 0 0	3 0 0
643	2½	Thurso	2 10 0		2 10 0
		Tillicoultry			
		Turriff			
800	1	Tranent	1 0 0	5 0 0	1 0 0
		Troon			
		Tullibody			
2651	1	Wemyss & Buckhvn.	1 0 0	6 0 0	1 0 0
		Wick			
665	5	Wigtown	5 0 0		
		IRELAND.			
1800	1	Antrim (Limited)	1 0 0		1 0 0
		Ardee			
300	10	Armagh (Limited)	10 0 0	10 0 0	20 2 6
500	5	Athy (Limited)	4 0 0	6 0 0	5 0 0
		Balbriggan . £1400			
		Ballycastle			
1200	7½	Ballymena & Harryville (Limited)	7 10 0	5 0 0	7 10 0
184	10	Ballymoney	10 0 0	5 0 0	10 0 0
220	5	Ballynahinch (Lim.)	5 0 0	5 0 0	5 0 0
		Ballyshannon . £2000			
		Bangor, Down			
5250	20	*Belfast*	20 0 0	10 0 0	39 0 0
2450	20	Do., new shares	20 0 0	10 0 0	35—37
		Boyle (Limited)			
1047	5	Carlow	5 0 0	5 0 0	5 0 0
600	5	Carrickfergus (Lim.)	5 0 0	8 0 0	6 5 0
200	10	Carrickmacross (Lim.)	10 0 0	6 0 0	10 0 0
300	10	Carrick-on-Suir	10 0 0	6 0 0	10 0 0
228	10	Castleblaney (Lim.)	10 0 0	5 0 0	10 0 0
		Castlederg			
400	5	Cavan (Limited)	5 0 0		5 0 0
		Clones (Lim.) . £2000			
2000	5	Clonmel Consumers	5 0 0	6 0 0	5 10 0
240	5	Comber (Limited)	5 0 0	5 0 0	5 0 0
500	5	Cookstown	5 0 0	5 0 0	
		Coote Hill			
12000	5	*Cork Consumers* (L)	5 0 0	8 0 0	7 15 0
6000	5	Do., new shares	4 0 0	8 0 0	6 10 0
		Donaghadee . £2000			
608	11	Drogheda	11 0 0	7 0 0	14 10 0
420	5½	Do., new shares	5 10 0	7 0 0	7 5 0
19000	10	*Dublin Alliance*, A shares	8 0 0	8 0 0	13—13½
10000	10	Do., B shares	5 10 0	8 0 0	7⅞—8
13500	10	Do., C No. 1 shares	10 0 0	8 0 0	15¼—15½
12500	10	Do., C No. 2 shares	5 10 0	8 0 0	7⅞—8
440	25	Dundalk (Limited)	25 0 0	8 0 0	25 0 0
600	5	Dungannon	5 0 0	5 0 0	6 0 0
871	5	*Downpatrick*	5 0 0	4 0 0	4 0 0
249	10	Ennis (Limited)	10 0 0		11 0 0
240	25	Galway	25 0 0	10 0 0	35 0 0
		Gorey (Lim.) . £2000			
		Holywood (Limited)			
	10	Howth (L.) . £3500			
		Keady			
600	5	Kells (Lim.) Meath	5 0 0	6 0 0	5 0 0
600	10	Kilkenny (Limited)	10 0 0	9 0 0	12 10 0
		Killarney (L.) . £3000			
		Kilrush			
		Kinsale (L.) . £2000			
210	10	Larne (Limited)	10 0 0	5 0 0	10 0 0
150	10	Letterkenny (Lim.)	10 0 0	6 0 0	11 0 0
		Limerick (*see* United General.)			
500	10	Lisburn (Limited)	10 0 0	10 0 0	14 0 0
300	5	Lismore	5 0 0	3 0 0	
100	5	Do., preference	3 0 0	5 0 0	
1200	27½	Londonderry	27 10 0	6 7 3	34 10 0
1000	3	Longford	3 0 0	5 0 0	3 0 0
540	10	Lurgan	8 0 0	6 0 0	9 0 0
	1	Maghera (Limited)			
		Mallow			
2191	1	Maryborough (Lim.)	0 5 0		0 5 0
		Midleton			
770	5	Monaghan (Limited)	5 0 0	4 10 0	5 16 0
2000	10	Navan	5 0 0	6 0 0	4 0 0
		Nenagh			
1000	5	New Ross	3 10 0	12 10 0	6 0 0
1400	5	Newry Conrs. (Lim.)	5 0 0	10 0 0	8 3 0
450	5	Newtownards	5 0 0	7 0 0	6 5 0
200	10	Newtownlimavady	10 0 0	5 0 0	10 0 0
		Omagh	5 0 0	7 10 0	6 0 0
414	5	Parsonstown (Lim.)	5 0 0		
250	20	Portadown	20 0 0	5 0 0	20 0 0
125	20	Portaferry			
700	10	Queenstown	10 0 0	6 0 0	11 0 0
		Roscommon . £2500			
	5	Roscrea (L.) . £2500			
		Saintfield (L.) . £1000			
600	5	Skibbereen (Lim.)	5 0 0	4 0 0	
600	10	Sligo	10 0 0	8 0 0	12 10 0
600	5	Do., new shares	5 0 0	8 0 0	6 5 0
		Tandragee (Limited)			
	5	Thurles (L.) . £2500			
		Tuam (Lim.) . £3000			
540	5	Tullamore	5 0 0	6 0 0	5 0 0
240	5	Tullow	5 0 0	6 0 0	5 0 0
		Warrenpoint . £3000			
1600	10	*Waterford*	10 0 0	6 0 0	12 0 0
1200	5	Wexford Consumers	5 0 0	10 0 0	8 0 0
300	10	Wicklow (Lim.)	10 0 0	6 0 0	10 0 0

Share List of Water Companies.

See "Share List of Gas Companies" for Gas and Water Companies.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Dividend per Ct. per Annum.	Last Quotation.
	£		£ s d	£ s d	£ s d
		Airdrie & Coatbdge			
588	1	Alexandria, Dumbartonshire	1 0 0		0 2 6
200	20	Ardrossan	20 0 0	6 0 0	27 0 0
	100	Ashford (Limited)			
800	25	Ayr	25 0 0	5 0 0	25 0 0
1460	10	Banbury	10 0 0	3 10 0	9 0 0
		Belper			
9600	25	Birmingham	25 0 0	6 10 0	34 0 0
9600	17½	Do., new shares	3 0 0	6 10 0	
6000	10	Blackburn	10 0 0		
		Boston			
		Bridge of Earn (L) £450			
	1	Brightlingsea (L.)			
		Brighton, Hove, & Preston			
8000	25	Bristol	25 0 0	3 2 0	20—21
8000	12½	Do., preference	12 10 0	5 0 0	13 2 6
500	10	Briton Ferry	5 0 0		
		Broadstairs		4 0 0	
		Brompton & Gillingham			
5000	10	Bury & Radcliffe	10 0 0	2 0 0	10 0 0
1333	15	Do., pref. shares	15 0 0	10 0 0	31 15 0
1333	18	Do., do.	6 0 0	10 0 0	14 0 0
2000	10	Do., do.	5 0 0	4 0 0	5 0 0
2000	10	Do., do.	1 0 0	4 0 0	5 0 0
	5	Calverley District	3 10 0		4—4¼
3250	Sk.	Cambridge	100 0 0	7 10 0	180 0 0
3250	3	Do.	2 15 0	7 10 0	
	Sk.	Cardiff	100 0 0	5 13 0	115 0 0
1500	10	Do.	8 0 0	5 15 0	9 0 0
	10	Charlemb. L. £3000			
55625	Sk.	Cheltenham	100 0 0	5 5 0	120 0 0
687½	25	Do., pref. shares	25 0 0	4 10 0	25 0 0
		Chepstow			
		Chester			
2485	2	Clay Cross	2 0 0	8 0 0	2 16 0
508	2	Do.	0 10 0		0 14 0
		Colchester			
175	20	Colne, Lancashire	20 0 0	5 0 0	28 0 0
	5	Consett District	4 0 0		4¾—4¾
	2	Corwen (Limited)			
		Dartford			
1250	20	Darwen	20 0 0	3 0 0	15½—16½
1400	5	Deal	5 0 0	7 0 0	6 0 0
1600	25	Derby	25 0 0	10 0 0	56 0 0
3200	12½	Do.	4 0 0	7 0 0	5 5 0
400	50	Dudley	50 0 0	1 0 0	20 0 0
250	25	Do., pref. shares	25 0 0	4 10 0	
		Dukinfield			
9500	10	Dundee	10 0 0	7 10 0	15 0 0
5100	10	Do.	10 0 0	6 10 0	13 10 0
2670	5	Dunfermline	5 0 0	2 0 0	2 10 0
	5	Durham	5 0 0		7¼—7½
		East Barnet Gas & Water			
7360	25	Edinburgh	25 0 0	5 0 0	28 0 0
7360	12½	Do., new shares	12 10 0	5 10 0	16 0 0
7218	6¼	Do., do. ¼ shares	6 5 0	5 0 0	7 0 0
5581	6¼	Do., do. do.	2 10 0	5 0 0	2 15 0
2000	25	Exeter	25 0 0	6 10 0	42 0 0
		Falmouth			
	2	Fenny Com. L. £600			
		Folkestone			
		Gosport			
	20	Gravesend & Milton	20 0 0	3 0 0	14—16
		Great Grimsby (L)			
1000	5	Greenock (Shaw's Gravitation)	50 0 0	7 0 0	68—70
		Guiseley, n. Leeds			
		Harrogate			
		Heywood			
390	10	Horsham (Lim.)	10 0 0	2 10 0	
1500	10	Kilmarnock	10 0 0	2 0 0	8 0 0
3200	25	Leicester	25 0 0	4 10 0	27 10 0
120	25	Lewes	25 0 0	6 0 0	26 0 0
		Limerick			
1080	25	Lincoln	25 0 0	8 0 0	43 10 0
2300	5	Luton	4 0 0		
		—			
		London Comps.—			
47000	10	Berlin	10 0 0	4 10 0	8—9
12000	25	Chelsea	25 0 0	5 5 0	28—29
975000	Sk.	East London	Stock.	6 0 0	126—128
10000	50	Grand Junction	50 0 0	8 0 0	78½—79
5840	25	Do., ¼ shares	25 0 0	8 0 0	39¼—39½
2160	25	Do., new ¼ sh.	10 0 0	7 10 0	
2310	100	Kent	100 0 0	6 0 0	129—131
1460	100	Lambeth	100 0 0	6 0 0	110—115
4120	50	Do., new shares	50 0 0	6 0 0	51¼—53
		New River		441 6 8	£17,400
1560	100	New River London Bge. Annuities	100 0 0	2 10 0 per sh.	55 0 0
	5	N. Mdlsx. L. £30,000			
3036	100	Southwark and Vauxhall	100 0 0	6 0 0	126—128
3036	25	Do., do.	25 0 0	6 0 0	31½—33½
1296	100	Do., do.	100 0 0	5 0 0	104—106
1296	100	Do. (1867)	85 0 0	4 10 0	106—108
12168	61	West Middlesex	61 0 0	5 15 0 per sh.	110 0 0
		Do., new shares	6 2 0	4 0 0	9—9½
		—			
		Liskeard			
		Maidstone			
		Maldon (Lim.)			
		Margate			
		Matlock			
650	10	Neath	10 0 0	7 10 0	14 0 0
310000	Sk.	Newcstl. & Gatshd.	All.	4 10 0	77—78
9600	6¼	Do., prcf. do.	5 0 0	5 0 0	5¼—5¾
135	20	Newport, Carisbrooke	20 0 0	4 10 0	26 0 0
		Newport, Mon.			
		Newry (L.) £6000			
2000	10	North Cheshire	10 0 0	10 0 0	17 10 0
1600	10	Do.	4 0 0	10 0 0	7 0 0
		North Shields	10 0 0		12—12¼
		Norwich			
4400	50	Nottingham	50 0 0	5 0 0	62 0 0
	5	Papcastle (Limited)			
		Pontypridd (Lim.)			
		Poole District (L.)			
	5	Portland (Lim.)			
8000	10	Portsmouth	10 0 0	6 0 0	
8000	5	Do.	2 10 0	6 0 0	
451	10	Queenstown (L.)	10 0 0	6 0 0	10 0 0
603	5	Ramsey, I. of Man	5 0 0	10 0 0	9 5 0
1500	10	Ramsgate	10 0 0	6 0 0	13—13½
		Reading			
		Rochdale			
		Rothesay (L.) £7000			
		Royston (L.) £2500			
		Saffron Walden (Lim.)			
900	10	St. Alban's	10 0 0	4 0 0	10 0 0
		St. Helen's			
	1	Sanquhar (Lim.)			
		Scarborough			
	100	Sheffield			71—72
	50	Do.			35—36
	25	Do.			17—18
	50	Do., preference			40—41
	12½	Do., B do.	10 0 0		¼—¼ pm.
	8	Do., C do.	2 0 0		2 6 6
		Shrewsbury			
		Southport			
11184	10	South Staffordshire	10 0 6		11 17 0
2554	10	Do.	5 0 0		
		Spalding			
21000	5	Staffordshire Potteries	5 0 0	6 0 0	7 5 0
1800	12½	Stockton & Middlesboro'	12 10 0	6 0 0	
800	12½	Do., A shares	12 10 0	6 0 0	
1591	12½	Do., B shares	7 0 0	6 0 0	
4000	10	Do., C preference	2 0 0	5 0 0	2½
		Stow-on-W. £1000			
37800	5	Sunderland & S. Shields	5 0 0	9 10 0	9 12 6
		Tintwhistle			
		Toicross, Lanark			
		Tweedmouth (L.) £500			
		Wakefield			
3000	10	Warrington	10 0 6	5 10 0	12 0 0
5000	3	Do.	10 0 6	5 10 0	11 0 0
		Wellington, Salop			
		Weston-sup-Mare			
		Weymouth			
		Winchester G. & W.			
		Wirral, Cheshire			
20000	5	Wolverhmpton New	5 0 6	4 0 0	5 0 0
278	1	Woodford Halse (L)	1 0 0		
	1	Wyke (Limited)			
		Yeadon (Limited)			
6000	10	York New Co.	10 0 0	5 0 0	11 12 6

GAS-WORKS BELONGING TO PRIVATE INDIVIDUALS.

Those marked * by the purchase of the shares in extinct companies.

Alford.
Ballina.
Beaufort (Brecon).
Beaumaris.
Berkeley.
Billericay.
Bodmin.
Broadbottom.
Bungay.
Burntisland.
Chapel-en-le-Frith.
Chard.
Clare, Suffolk.
Crewe.
Dingwall.
Donnington, Salop.
Ebbw Vale & Lilleshall
Eccleshill, near Leeds.
Ellesmere.
Enniscorthy.
Farsley.
Fermoy.
Ferry Hill.
Goole.
Hadleigh.
Halstead.
Harleston.
Harrow-on-the-Hill.
Hayle.
Holt.
Hunmanby.
King's Langley.
Leiston (Suffolk).
Milnrow, nr. Manchester.
Mold Green, nr. Huddersfield.
Mullingar*.
Nantwich*.
Nettlebed.
New Ross.
Oakham*.
Parsonstown.
Penryn.
Pontypool.
Redditch.
Ripon.
Ross.
Rhyl.
St. Blazey (Cornwall).
St. Ives* (Hunts).
St. Neots*.
Seaham.
Sittingbourne.
Southall, Middlesex.
Stokesley.
Stowmarket.
Tipperary.
Tiverton*.
Wem.
Whitchurch (Salop).

GAS-WORKS BELONGING TO LOCAL BOARDS, MUNICIPAL CORPORATIONS, OR COMMISSIONERS,

Acting under special Acts of Parliament.

Aberavon.
Abergavenny.
Athlone.
Ballinasloe.
Bethesda, Bangor.
Beverley.
Bingley.
Birkenhead.
Blackpool, & Layton with Warbk.
Bollington (Ches.).
Brighouse.
Burnley.
Burton-on-Trent.
Bury (Lanc.).
Buxton.
Carlisle.
Cashel.
Cleckheaton.
Coleraine
Congleton.
Dalton.
Darlington.
Devizes.
Doncaster.
Dundee.
Enniskillen.
Glasgow.
Great Malvern.
Greenock.
Halifax.
Haverfordwest.
Heywood.
Highbridge.
Keighley.
Knaresborough.
Leeds.
Leek.
Limerick Corp. Wks.
Lytham (Lanc.).
Macclesfield.
Manchester.
Maryport.
Middlesborough.
Middleton.
Milton (Kent).
Nelson, n. Burnley.
Newton (Lanc.)
Oldham.
Oswaldthwistle.
Paisley.
Renfrew.
Richmond (Yorkshire).
Ripon.
Rochdale.
Rotherham.
Rothesay.
St. Mary Church.
Salford.
Southport.
Sowerby Bridge.
Spalding.
Stockport.
Stockton-on-Tees.
Strabane.
Teignmouth.
Tenby.
Tralee.
Trim (Meath).
Tyldesley & Shakerley.
Wallasey.
Walsall.
Wells (Norfolk)
Widnes.
Workington.
Youghall.

WATER-WORKS BELONGING TO PRIVATE INDIVIDUALS.

Campbelltown. Chidwall (Lancaster). Hyde (Cheshire). Knaresborough. Stamford. Windsor & Eton.

WATER-WORKS BELONGING TO LOCAL BOARDS OF HEALTH, MUNICIPAL CORPORATIONS, OR COMMISSIONERS,

Acting under special Acts of Parliament.

Aberdeen.
Abergavenny.
Aberystwith.
Alnwick.
Ashby-de-la-Zouch.
Ashton-under-Lyne.
Baildon, Yorkshire.
Barnsley.
Bath.
Belfast.
Bilston.
Birkenhead.
Bishop's Auckland.
Bolton.
Bradford, Yorkshire.
Brynmaur, Brecon.
Burnley.
Bury St. Edmund's.
Carlisle.
Carmarthen.
Chelmsford.
Chorley
Cork
Coventry
Croydon.
Darlington.
Dartmouth.
Dorchester.
Dover.
Dublin.
Dumfries.
East Stonehouse.
Ely.
Epsom, Surrey.
Fareham, Hants.
Glasgow.
Gloucester.
Greenock.
Halifax.
Hastings and St. Leonard's.
Haverfordwest.
Haworth, Yorkshire.
Huddersfield.
Hull.
Ilfracombe, Devon.
Keighley.
King's Lynn.
Kirkcaldy.
Knighton, Radnor.
Lancaster.
Leamington.
Leeds.
Leek.
Leith.
Liverpool.
Llandilo.
Llanelly.
Lytham.
Macclesfield.
Maidstone.
Manchester.
Merthyr Tydvil.
Montrose.
Nantwich, Cheshire.
Oldham.
Oxford.
Paisley.
Pembroke.
Penrith.
Penzance.
Perth.
Peterhead.
Pontefract.
Poole.
Port Glasgow.
Preston.
Pultneytown, Caithness.
Rotherham.
Rugby.
Salford.
Salisbury.
Sheerness.
Shipley.
Southampton.
Stirling.
Stockport.
Stroud.
Swansea.
Teignmouth.
Torquay.
Tunbridge Wells.
Wallasey.
Warwick.
Welchpool.
West Cowes.
Whitby.
Whitehaven.
Wigan.
Windhill, Yorkshire.
Wirksworth.
Worcester.

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1 in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lb.

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle and Middlesboro'.	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Pig Iron, No. 1 (f.m.b.)	3 15 0	2 12 0	2 10 6	3 10 0	3 15 0
1½ and 2-inch Socket-pipes	7 0 0	5 15 0	5 10 0	6 0 0	7 0 0
2½ and 3-inch ditto	6 10 0	5 5 0	5 0 0	5 15 0	6 10 0
4 and 5-inch ditto	6 0 0	4 15 0	4 10 0	5 5 0	6 0 0
6 inches and upwards ditto	5 15 0	4 9 0	4 0 0	5 0 0	5 15 0
Retorts, 1st fusion, hot blast	5 10 0	4 10 0	4 5 0	5 0 0	5 10 0
Ditto, 1nd ditto, cold ditto	5 10 0	—	—	—	5 10 0
Trank-plates, ¾ thick and above	6 0 0	5 0 0	4 15 0	5 10 0	6 0 0

WROUGHT-IRON TUBING,

Subject to 60 per cent. Discount.

	¾ in.	1¼ in.	1½ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 14 feet—per foot	1 8	1 1	0 10	0 7	0 5	0 4½
Ditto ditto, from 12 in. to 23½ in.—each	3 6	2 0	1 6	1 1	0 9	0 6
Long Screws, from 12 in. upwards	4 0	2 3	2 0	1 6	1 2	0 11
Bends and Springs	4 3	2 8	1 9	1 3	0 11	0 8
Square Elbows, equal or reducing; Round Elbows, 6 per cent. extra	3 9	2 3	1 9	1 3	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 9
Crosses, ditto, equal or reducing	4 9	3 6	3 0	2 3	1 9	1 6
Iron Cocks	20 9	13 0	10 0	7 3	5 0	3 6
Ditto, with brass plug	28 0	18 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Nipples	1 3	0 9	0 8	0 6	0 5	0 4½
Plain Sockets	1 0	0 8	0 7	0 5	0 4	0 3
Syphons, 2-quart	15 0	14 0	13 6	13 0	12 0	—

FREIGHTS.

Coastwise—Newcastle:—	Per Ton.	*Foreign:—*	Per Keel.
Chatham and Rochester	6s. 6d	Barcelona	£18 10s
Cork	8 3	Bordeaux	12 10
Dover, Folkestone, and Ramsgate	7 3	Boulogne and Calais	8 10
Dublin	8 6	Cadiz	10 0
Exeter Quay	9 0	Cronstadt	—
Ipswich	6 6	Copenhagen	—
London (from Leith)	8 6	Genoa	17 15
London (Pool)	6 6	Hamburg	—
Lowestoft and Yarmouth	6 0	Havre de Grace	10 0
Portsmouth & Southampton	7 9	Leghorn	17 0
Plymouth	8s. to 10 0	Liabon	9 10
Shoreham	7 6	Rotterdam	—
Whitstable	7 0	Stettin	—
Weymouth	8 0	Trieste	18 0
		Venice	20 10

GAS COALS.

Newcastle—Unscreened:—	Per Ton.
Haswells, Nettlesworth Primrose, and South Pelaw	6s. 6d.
Felling, Framwell Gate, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	6 9
Burnhope, Craghead, Charlaw, Derwent, East Castle, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Lanchester Pelaw, Medomsley, Mickley, New Pelaw, Pelaw Main, Ravensworth, Seaham, South Moor Pelton, South Leverson, Townley Main, Tyne Main, West Pelaw, Wearmouth Hutton, and Witton	7 0
Peareth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	7 3
Brancepeth, Dean's Primrose, Londonderry Gas, New Pelton, Pelton, South Peareth, Stella, Urpeth, Washington Hutton, and West Leverson	7 6
Ramsay's Newcastle Cannel	17 6
Wigan Cannel (at Liverpool)	17 0
Welsh Cannel:—	
Coppa Cannel (on rails at Birkenhead), 13s. 6d.; ditto (on rails at Connah's Quay)	13 0

Scotch Cannel, f.o.b.:—	Per Ton.	*Scotch Cannel, f.o.b.:—*	Per Ton.
Boghead—at Bo'ness, 47s. 6d.; at Leith	48s. 2d	Arniston (at Leith)	21s. 0d
Muirkirk	27 0	Wemyss (at Wemyss)	20 0
Kirkness, best (at Burntisland)	22 6	Haywood Co.'s Haywood (at Granton)	20 0
Capeldrae, 1st quality (at ditto)	22 6	Pirnie, or Methill	17 0
Ditto, 2nd ditto (at ditto)	17 6	Lothian's Cannel (at Leith)	24 6
Cowdenbeath (at ditto)	12 0	Grange ditto (at Bridgeness)	17 6
Lochgelly (at ditto)	12 0	Kinniel ditto (at Bo'ness)	17 6
Donnibristle—at Burntisland, 12s.; at Aberdour	12 6	Myles' ditto	23 6
Auchinheath Lesmahago (at Granton)	27 0	Lochore Parrot (at Burntisland)	22 6
Duke of Hamilton's Lesmahago (at Granton)	27 0	Lanemark (at Glasgow)	16 0
		Elphinstone Tower (at Leith)	20 0

SUNDRIES.

Best Newcastle Fire-bricks, per 1000	£2 10s. to £2 15s. 0d.
Cliff's Fire-bricks (at Wortley), per 1000	2 15 0
Ingham's ditto (at Wortley), per 1000	2 15 0
Farnley Iron Co.'s Fire-bricks (at Wortley), less discount	3 17 0
Fire-clay Retorts, per foot run	5s. 6d. to 0 7 6
Tarred Rope Yarn, per cwt.	1 0 0

Advertisements.

FLETCHER, SPECK, & CO.,

CONTRACTING GAS ENGINEERS, IRON & BRASS FOUNDERS,

GLENGALL IRON-WORKS, MILLWALL, LONDON, E., and RATCLIFF FOUNDRY, COMMERCIAL ROAD EAST, LONDON, E.,

MANUFACTURERS OF

TELESCOPIC and **SINGLE GASHOLDERS, TANKS, PURIFIERS, CONDENSERS,** and every description of **GAS-MAKING APPARATUS. IRON MAIN-PIPES** supplied and laid. **RETORTS, MOUTHPIECES, CROSS-BARS, RETORT-LIDS, VALVES, WROUGHT-IRON TUBES,** and **FITTINGS.** Wrought and Cast Iron Hydraulic Mains. **LAMP-POSTS, COLUMNS, GIRDERS, BRIDGES,** &c.

CORRUGATED IRON ROOFS & BUILDINGS.

Coke Barrows, Shovels, Scoops, Bolts & Nuts, Cotters, &c., kept in Stock.

WANTED, a Manager, where the make is from 12 to 15 million feet per annum. He will have to take indices and collect the accounts. None need apply but a practical man. Married preferred. House and gas on the works. State salary required.
Address C. W., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by the Advertiser, a situation as SECRETARY and MANAGER. Fully understands the manufacture and distribution of gas, main and service laying, fitting, &c. Well up in accounts and collecting. Excellent testimonials and references.
Address P. B., 2, Grafton Road, Prince of Wales Road, Kentish Town, LONDON.

WANTED, a situation, by a good Gas-FITTER. Good reference given.
Address R. HOLLOWAY, 9, Burn Street, Ormond Street, MANCHESTER.

TO GAS-FITTERS AND OTHERS.

AN Opening for a young Man, at a Provincial Gas-Work, who understands main and service laying, fittings, meters, &c. A permanency.
Apply to H. X., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

GAS-MAKER WANTED.

WANTED, a Manager, for a small Gas-Work in a village in North Wales. Capable of making gas, taking meters, making out gas bills and collecting the same. Security for £100 required. Cottage, with gas and coal found.
Apply by letter only, stating qualifications and wages per week required, to F. J. COLLINGWOOD, Esq., Rhyl, NORTH WALES.

WANTED, at or before Lady-day next, an engagement as Manager, or Secretary and Manager of a Gas-Work, where the annual production is about 50 million cubic feet. The Advertiser is at present engaged as Assistant Manager to a Gas Company in a large provincial town.
Address J. H. A., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by the Advertiser, a re-engagement on a Gas-Work. Understands manufacture, testing, main and service laying, fitting, &c.; also book-keeping and collecting. Good references.
Address H. N. H., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

AS MANAGER OR METER INSPECTOR.

THE Advertiser seeks an engagement as above. Is thoroughly experienced in the management of Gas-Works.
Address S. J., 20, Upper John Street, Hoxton, LONDON.

STATION-METER.

FOR SALE, a Station-Meter to pass 15,000 cubic ft. per hour, in a handsome square case; made in 1854.
For particulars, apply to JOHN EUNSON, Gas-Works, NORTHAMPTON.

FOR SALE, a Combined Purifier and CONDENSER, with centre change-valve, suitable for 300 lights. Extreme size, 7 ft. 5 in. by 6 ft. by 3 ft. 1 in. high.
Apply to the BRYMBO COMPANY, near WREXHAM.

TO GAS APPARATUS CONTRACTORS.

THE Edinburgh and Leith Gas Company are prepared to receive OFFERS up till the 31st of January, for the erection at their works of a quartet set of large DRY LIME PURIFIERS, with connexions and elevated platform for the same, agreably to plans and specifications, which can be examined at the Office here on application to JOHN REID, Engineer and Manager.
Edinburgh and Leith Gas Company's Office,
11, Baltic Street, Leith, Dec. 31, 1870.

GAS-TANKS AND GASHOLDERS FOR SALE.

THE Edinburgh and Leith Gaslight Company have FOUR CAST-IRON TANKS, with Gasholders, for disposal. Two larger cast-iron Tanks, 51½ ft. diameter, and 26 ft. deep, and two smaller, 41½ ft. diameter, and 20 ft. deep; each size with Gasholders in constant daily operation. The capacity of each of the two large Gasholders is 50,000, and the smaller size 25,000 cubic feet.
These are worthy the attention of Gas Companies, Paraffin Oil and Coal Tar Manufacturers, and can be inspected by application to the Subscriber, by whom proposals to purchase will be received till Jan. 31, 1871.
JOHN REID, Engineer and Manager.
Edinburgh and Leith Gas-Works,
11, Baltic Street, Leith, Dec. 17, 1870.

BIRMINGHAM GASLIGHT AND COKE COMPANY.

THE Directors of this Company require the services of a Gentleman as SUB-ENGINEER. He must be thoroughly acquainted with the modern principle of making and purifying gas, and have been accustomed to the management of workmen. Salary to commence at £250 per annum, with residence on the works.
Applications, stating age and qualifications, to be addressed to the CHAIRMAN, on or before Jan. 14, 1871.
By order,
JOSEPH HARRISON, Secretary.
Offices, Union Street, Birmingham,
Dec. 19, 1870.

TO GAS ENGINEERS, BUILDERS, CONTRACTORS AND OTHERS.

THE Directors of the Midland Railway Company are desirous to obtain TENDERS for the erection of GAS-WORKS at Mangotsfield Station, near Bristol.
Plans and specifications may be seen at the Locomotive Offices, at Derby, on and after Wednesday, Jan. 4, 1871.
Tenders for the Iron and Brickwork to be sent in separately, and addressed to the Secretary of the Company at Derby, endorsed "Tender for Gas-Works," and must be sent in not later than Monday, Jan. 16, 1871.
By order,
JAMES WILLIAMS, Secretary.
Derby, Dec. 28, 1870.

GAS-WORKS INSURED AGAINST FIRE.

QUEEN INSURANCE COMPANY.

Capital—£2,000,000.

CHIEF OFFICES:
QUEEN INSURANCE BUILDINGS, DALE STREET, LIVERPOOL;
AND
60, GRACECHURCH STREET, LONDON, E.C.

TWELFTH ANNUAL REPORT.

The Report and Accounts for the Year 1869, presented to the Shareholders at the Annual Meeting, on Thursday, May 19, 1870, at which Bernard Hall, Esq., presided, showed, in the

LIFE BRANCH,

That the deaths were 20 per cent. under the expectation, and the total amount paid in satisfaction of claims 12 per cent. under the sum so expected, the result being an addition to the Life Fund of an amount equal to 57 per cent. of the net Premiums received during the year—viz., **£21,417,** and,

That notwithstanding the divisions arising out of two quinquennial valuations, and the payment of all claims and expenses, the amount now at the credit of the Life Fund is over 50 per cent. of the entire net Premiums received, *not only on the Policies actually existing, but on every Policy issued since the formation of the Company.*

IN THE FIRE BRANCH,

That the Premiums for 1869, after deducting re-insurances, amounted to **£140,104,** being an increase of **£17,974** on the income of 1868.
£17,800 of the balance at the disposal of the Shareholders was appropriated in payment of a Dividend of Ten per cent.
The Fire Reserve-Fund was increased to **£86,000** by the addition of **£6000,** and
The sum of **£9062** was carried forward to next year's Accounts.
The Income of the Company was shown to be £237,896, and
The Funds in Hand, £467,772.
Memo.—The Company has paid in satisfaction of Fire Claims over **£600,000.**
J. MONCRIEFF WILSON, General Manager.
THOS. W. THOMSON, Sub-Manager.
J. K. RUMFORD, Resident Sec., London.

LAW UNION FIRE & LIFE INSURANCE COMPANY.

CHIEF OFFICE:
126, CHANCERY LANE, LONDON, W.C.

Capital—ONE MILLION STERLING,
Fully subscribed by upwards of 450 Shareholders, nearly all of whom are members of the Legal Profession.

CHAIRMAN—Sir WILLIAM FOSTER, Bart., Norwich.
DEPUTY-CHAIRMAN—JAMES CUDDON, Esq., Barrister-at-Law, Goldsmith Building, Temple.

The Capital subscribed and Funds in hand amount to upwards of £1,250,000, affording unquestionable security. The Directors invite particular attention to the new form of Life Policy, which is free from all conditions.
The Company advances money on Mortgage of Life Interests and Reversions, whether absolute or contingent.
Gas-Works insured against Fire and Explosion, and Coals against Spontaneous Combustion.
Rates of Premium from 2s. to 10s. 6d.
Prospectuses, copies of the Directors' Report and Annual Balance-Sheet, and every information sent post free on application to
FRANK M'GEDY, Actuary and Secretary.

PARISH OF BIRMINGHAM.

TO GAS ENGINEERS AND OTHERS.

THE Guardians of the Poor of this Parish are desirous of receiving plans, specifications, and estimates for the erection of WORKS (including all appurtenances) for supplying Gas to the Workhouse and Boys School in connexion therewith, situate at Birmingham Heath. The consumption in winter is nearly 200,000 feet per week. The plans, specifications, and estimates must be prepared, and sent to me at these Offices, not later than Monday, Jan. 30, 1871, at the sole cost of the person estimating, and the wrapper must be endorsed "Gas Plan."
The site of the intended works, and any other information on the subject, may be obtained upon application to Mr. Sharp, the Master of the Workhouse.—By order,
WILLIAM THOMPSON, Clerk to the Guardians.
Parish Office, Paradise Street,
Birmingham, Dec. 20, 1870.

ALFRED LASS,

ACCOUNTANT.
28, NORTH STREET, WANDSWORTH, S.W.

Mr. Alfred Lass having had considerable experience in arranging, making up, balancing and auditing gas accounts, begs to inform the Directors of Gas Companies that he may be consulted on all matters relating thereto.
Balance-sheets prepared, Accounts audited, Consultations, Agencies, &c.

BOOKS FOR GAS ACCOUNTS.

ALFRED DOUBBLE & Co., 2, Serjeants INN, and 40, FLEET STREET, LONDON, make and supply all the various ACCOUNT-BOOKS as approved and adopted by Accountants, &c., to Gas Companies.
A complete set of the Books and Forms forwarded within a few days from receipt of order.

EDWD. SANDELL, Public Accountant and Auditor, 4, Skinner's Place, Size Lane, LONDON.
The projector of the *Gas Companies Analyzed Expenditure Account-Book* offers his experience and services in the examination, preparation, and production of all accounts in reference to Gas Companies. References if required.

CONSULTING GAS ENGINEERS.

MESSRS. GEORGE HEDLEY & CO.,
5, GEORGE STREET, WOLVERHAMPTON,
Advise upon PARLIAMENTARY ARBITRATIONS, and all matters connected with Gas.
Plans and Specifications prepared for the Erection and Alteration of Works.

ALFRED PENNY, Gas and Consulting ENGINEER,
WENLOCK IRON-WORKS,
21, WHARF ROAD, CITY ROAD, LONDON.
Mr. PENNY having had a large experience in the construction, alteration, and management of Gas-Works, begs to inform the Directors of Gas Companies that he may be consulted on all matters appertaining thereto. He also manufactures Gasholders, Purifiers, and all the various apparatus used in Gas-Works, and keeps in stock Retorts and Mouthpieces, Socket-Pipes, Bends, Branches, and T-pieces, &c., &c.
Plans, Specifications, and Estimates prepared.

BELGIAN CLAY RETORTS.

J. SUGG and CO., late ALBERT KELLER, GHENT.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.
Communications addressed to J. SUGG & Co., GHENT, will receive immediate attention.

JAMES OAKES & CO.,

ALFRETON IRON-WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20 & 22, WHARF ROAD, CITY ROAD, LONDON, N.,
Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.
N.B.—Orders for Cast-Iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention. CHARLES HORSLEY, Agent.

CATHELS & TERRACE'S Patent Four-WAY DISC GAS-VALVE is the simplest and best Valve for Purifiers, and as a By-pass for other apparatus in Gas-Works. It is always gas-tight, and has no springs, ground faces, or other delicate parts. By its use the flow of the gas cannot be accidentally stopped, and it never sticks.
For prices, &c., apply to the Manufacturers, Messrs. GUEST AND CHRIMES, Foundry and Brass Works, ROTHERHAM.

CATHELS'S Patent District Dry Gas-GOVERNOR is the only perfect self-acting contrivance for Regulating the Pressures in the higher levels of a district.
For prices, &c., apply to the Manufacturers, Messrs. GUEST AND CHRIMES, ROTHERHAM.

EDGE'S PATENT

FOR REMOVING THE
CARBONACEOUS INCRUSTATION FROM GAS-RETORTS.

"*Gas-Works, Leicester, Oct.* 28, 1870.
"Dear Sir,—I have used Edge's patent process for scurfing the Retorts at these works during the last twelve months, and I have great pleasure in testifying to its efficiency and economy; it is exceedingly simple, and can very readily be applied.—I am, dear sir, yours truly,
"ALFRED ROBINSON.
"E. Goddard, Esq."
For particulars and terms, apply to E. GODDARD, Sole Agent, Gas-Works, IPSWICH.

CAST-IRON Retorts, Socket-Pipes, with Syphons, and all requisite Connexions, Lamp Columns, Wrought-Iron Tubing, Valves, Street-Lamps, Sight Holes, Furnace Doors, Ash-Pans, Charging and Coke Shovels, Iron Pails, Coke Barrows, Cross Bars, Fire Pots, Pumps, and Iron Borings.
PURIFIERS, CONDENSERS, & SCRUBBERS erected complete, or the materials supplied; and every description of goods in use by Gas-Works, in stock, at wholesale prices, at
Mr. LYNCH WHITE'S,
Old Barge Iron Wharf, Upper Ground Street, LONDON.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
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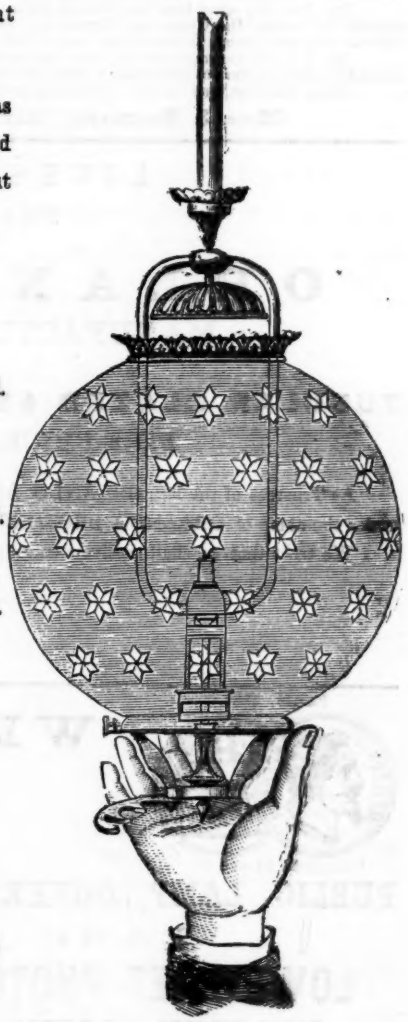

Fig. 2.

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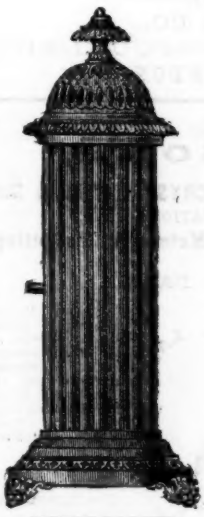

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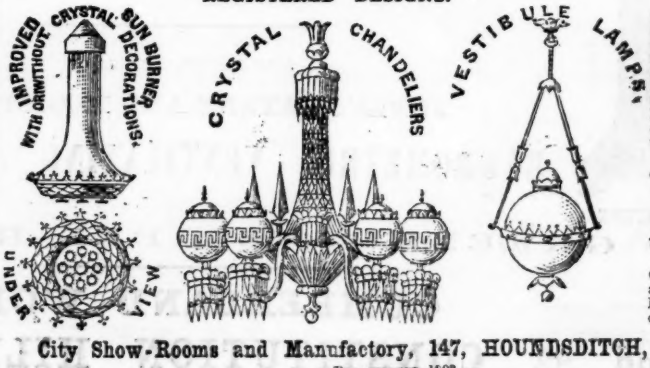

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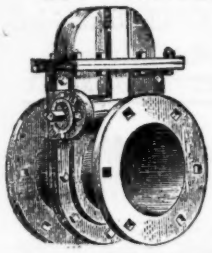

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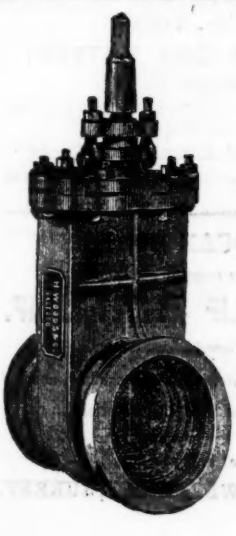

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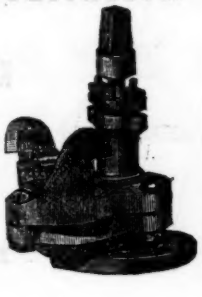

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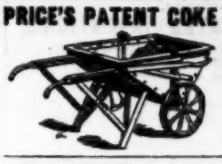

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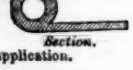

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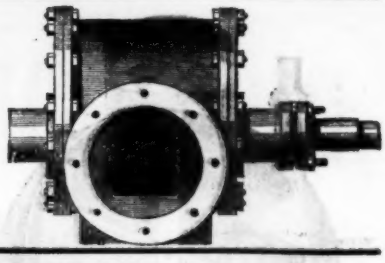

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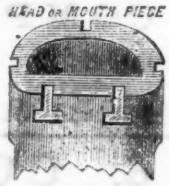

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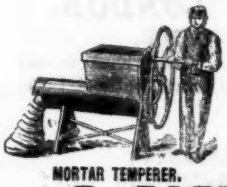

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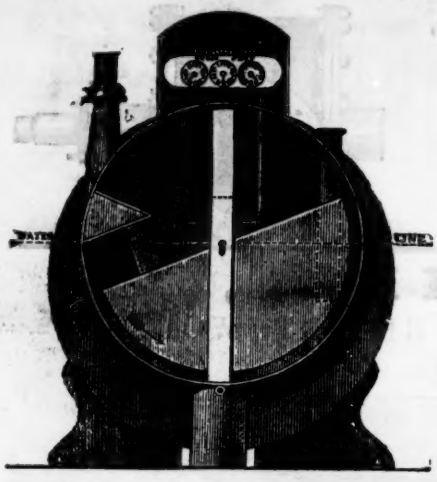

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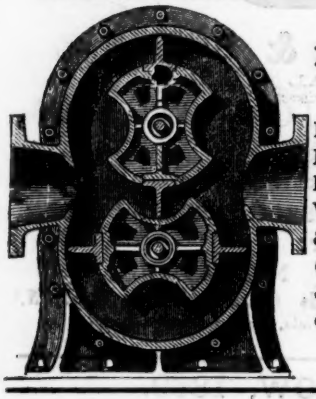

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